

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA

IN RE: FACEBOOK, INC., MDL No. 2843  
CONSUMER USER PROFILE Case No.  
LITIGATION 18-md-02843-VC-JSC

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This document relates to:  
ALL ACTIONS  
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ZOOM DEPOSITION OF FACEBOOK's 30(b)(6)  
CORPORATE REPRESENTATIVE - SIMON CROSS  
(Reported Remotely via Video & Web Videoconference)  
London, England (Deponent's location)  
Monday, June 20, 2022  
Volume 4

**REDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

STENOGRAPHICALLY REPORTED BY:  
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CONTINUED VIDEOTAPED DEPOSITION OF SIMON CROSS, taken  
on behalf of the Plaintiffs, with the deponent located  
in London, England, commencing at  
1:35 p.m., Monday, June 20, 2022, remotely reported  
via Video & Web videoconference before  
REBECCA L. ROMANO, a Certified Shorthand Reporter,  
Certified Court Reporter, Registered Professional  
Reporter.

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John Macdonell, Videographer

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## I N D E X

DEPONENT	EXAMINATION
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SIMON CROSS	PAGE
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## DESCRIPTION

Exhibit 425	Native Excel Spreadsheet,	867
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HC\_AEO\_2022-06016\_In re

FB-TablesColumn Names;

Exhibit 426	Native Excel Spreadsheet	920
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C2\_022-FB-MTHD-00080;

Exhibit 427	Native Excel Spreadsheet,	945
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FB-CA-MDL-029362498;

Exhibit 428	Native Excel Spreadsheet,	964
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C2\_018-FB-CA-MDL-02936296.

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1 London, England; Monday, June 20, 2022 09:04:04

2 1:35 p.m.

3 ---o0o---

4

5 THE VIDEOGRAPHER: We are on the record 01:35:43

6 at 1:35 p.m. on June 20th, 2022.

7 This is the deposition of Simon Cross,

8 Volume 4. We're here in the matter of the In Re:

9 Facebook, Inc. Consumer Privacy User Profile

10 Litigation. 01:35:59

11 I'm John Macdonell, the videographer with

12 Veritext.

13 Before the reporter swears the witness,

14 would counsel please identify themselves, beginning

15 with the noticing party, please. 01:36:09

16 MR. MELAMED: Good morning. My name is

17 Matt Melamed. I'm with the law firm of

18 Bleichmar Fonti & Auld. I represent plaintiffs.

19 With me here presently are Adele Daniel

20 and Emma Wright. They're from Keller Rohrbach, and 01:36:20

21 they also represent plaintiffs.

22 MR. SCHWING: This is Austin Schwing of

23 Gibson Dunn for defendant Meta, and with me are

24 Ian Chen, Hannah Regan-Smith, and Phuntso Wangdra

25 and Matt Buongiorno. 01:36:46

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1 Okay. I think I got everybody. 01:36:47

2 SPECIAL MASTER GARRIE: This is

3 Special Master Garrie on behalf of the courts.

4 Good morning, Counsel Buongiorno. It's

5 been a while. I hope you're healthy. 01:36:57

6 MR. BUONGIORNO: Thank you, Special

7 Master Garrie.

8 THE COURT REPORTER: At this time, I will

9 ask counsel to agree on the record that there is no

10 objection to this deposition officer administering 01:37:05

11 a binding oath to the deponent via remote

12 videoconference, starting with the noticing

13 attorney, please.

14 MR. MELAMED: No objection. Thank you.

15 MR. SCHWING: No objection for the 01:37:27

16 defendant.

17 THE COURT REPORTER: Mr. Cross, could you

18 raise your right hand for me, please.

19 THE DEPONENT: (Complies.)

20 THE COURT REPORTER: You do solemnly 01:37:45

21 state, under penalty of perjury, that the testimony

22 you are about to give in this deposition shall be

23 the truth, the whole truth and nothing but the

24 truth?

25 THE DEPONENT: I do. 01:37:45

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1 SIMON CROSS, 01:37:46

2 having been administered an oath, was examined and  
3 testified as follows:

4 EXAMINATION

5 BY MR. MELAMED: 01:37:46

6 Q. Welcome back, Mr. Cross.

7 A. Thank you.

8 Q. So as I mentioned, my name is

9 Matt Melamed from the law firm

10 Bleichmar Fonti & Auld. I'm going to be asking you 01:38:02

11 questions about the 30(b)(6) notice topics 2 and

12 8 today, and then, as I mentioned off the record,

13 Mr. Loeser is going to ask you a few questions

14 about topics 6 and 7.

15 So you understand for these topics, and 01:38:20

16 specifically for topics 2 and 8, you've been

17 designated by Facebook to answer questions on its

18 behalf, correct?

19 A. That's correct.

20 Q. Okay. And you are prepared to do so 01:38:29

21 today, correct?

22 A. I've done my best to prepare, yes.

23 MR. SCHWING: And, Matt, I just want to

24 just state for the record that we have certain

25 aspects of 2 and 8 that have been carved out for 01:38:39

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1 this witness. 01:38:42

2 MR. MELAMED: And to be clear, you're

3 talking about questions related to targeted

4 advertising and data brokers; is that right,

5 Mr. Schwing? 01:38:49

6 MR. SCHWING: That is correct.

7 MR. MELAMED: Okay.

8 Q. (By Mr. Melamed) So, Mr. Cross, just so

9 everybody's clear, you are not prepared to answer

10 questions today related to targeted advertising or 01:38:58

11 data brokers; is that right?

12 A. I have not prepared to answer questions

13 relating to targeted advertising and data brokers.

14 My understanding is that another witness has been

15 designated to -- to cover those types of things. 01:39:12

16 Q. Okay. So for ease of reference

17 throughout this deposition, I will likely ask about

18 third parties generally. And is it okay for you,

19 Mr. Cross and counsel, if when I ask those, you

20 understand that those do not include advertisers, 01:39:32

21 data brokers, and other parties related to targeted

22 advertising?

23 Is that -- Mr. Cross, does that make

24 sense to you? If I say "third parties," you will

25 understand it to not include those entities for 01:39:46

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## HIGHLY CONFIDENTIAL

1 which you are not prepared to testify? 01:39:49

2 A. Yes, I think that makes sense to me.

3 Q. And if you are unclear, please ask. And

4 I'm not -- this isn't to play tricks; it's just so

5 that I don't have to repeat a carve-out in every 01:40:01

6 question or series of questions.

7 Understood?

8 A. I understand, yes.

9 MR. MELAMED: Okay. And, Mr. Schwing,

10 same to you. If ever you believe a question 01:40:11

11 unclear because of that carve-out or you're not

12 sure what I'm getting at, I invite you to ask me to

13 clarify. I just want to make sure that the

14 testimony is -- is clear, but I'd like to avoid

15 having to add pause -- unnecessary pauses to every 01:40:24

16 question.

17 Does that make sense to you?

18 MR. SCHWING: It does. If we have things

19 that need to be clarified along the way, we'll try

20 to work that through. 01:40:37

21 MR. MELAMED: Great. Thank you.

22 Q. (By Mr. Melamed) So as you're aware,

23 Mr. Cross, there's a lot of material from past

24 experience that we are going to cover. I'm going

25 to hope to get through it as efficiently as 01:40:47

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1 possible. I hope you are going to do so as well. 01:40:49

2 Let's start with the description of the  
3 topics.

4 So for topic 2, there is a subcategory A.

5 And for that, plaintiffs are focused on the type of 01:41:00  
6 data Facebook sold, made accessible to, or made  
7 available to third parties.

8 Do you understand that?

9 MR. SCHWING: Matt, I think you -- I  
10 think it was unintentional. I think you misspoke 01:41:14  
11 and said "sold" instead of "shared."

12 MR. MELAMED: Thank you. Let me repeat  
13 that.

14 Q. (By Mr. Melamed) What type of data --  
15 make sure I'm reading this correctly. 01:41:25

16 The type of data --

17 MR. MELAMED: Thank you for the  
18 correction, Mr. Schwing.

19 Q. (By Mr. Melamed) The type of data  
20 Facebook shared, made accessible, or permitted 01:41:36  
21 third parties to target. That is the stated topic.

22 Do you understand that?

23 A. I do understand it. I'd love to  
24 understand where the boundary comes between making  
25 available to target, because that touches on 01:41:51

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1 targeted advertising, and I'd like to understand 01:41:55  
2 the -- the boundary there.

3 Q. Okay. So for purposes of questioning  
4 today, are you prepared to answer questions on the  
5 type of user data or information Facebook shared or 01:42:07  
6 made accessible to third parties, with the  
7 exception, as we spoke before, of targeted  
8 advertising and data brokers?

9 A. I'm prepared to -- to talk about data  
10 made available to -- to third parties via the -- 01:42:24  
11 the Graph API and the Facebook developer platform  
12 in particular.

13 Q. Are there any other ways that Facebook  
14 made data available to third parties? And, again,  
15 here -- and I'll repeat this a few times until we 01:42:41  
16 get in the habit -- this does not include to  
17 advertisers or data brokers.

18 A. When you say -- sorry. Again, to be  
19 clear, when you say "data" in this context, what  
20 kind of data are we -- are we talking about? 01:42:55

21 Q. User data.

22 A. So data on any particular user? "User  
23 data" meaning specifically what again? Again, I  
24 just want to be super clear.

25 Q. I'm just asking -- and if you're not 01:43:10

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1 clear and if you're unable to answer, tell me. 01:43:12

2 I'll try to do my best to clarify.

3 But the question is: Are you prepared to

4 answer questions about the types of user data for

5 user information that Facebook shared or made 01:43:21

6 accessible to third parties?

7 A. I've done my best to prepare on that --

8 on that topic, yes.

9 Q. And then you are also going to testify

10 about subtopic 2C -- correct? -- which is "the 01:43:40

11 format or formats through which Facebook made user

12 data or information accessible or available to

13 third parties," correct?

14 A. I'm prepared to testify on -- on that,

15 again, with this -- this focus on the Facebook 01:44:00

16 developer platform, which is what I believe is --

17 is pertinent to this case.

18 Q. Are there other ways that Facebook made

19 user data available to third parties, not including

20 targeted advertisers or data brokers? And by 01:44:15

21 "other ways," I'm speaking of other than via the

22 Facebook platform.

23 A. It's possible that like user data was

24 made available to third parties over -- over other

25 means. For example, attachments to emails, 01:44:33

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1        which -- which would -- I'm not able to identify                      01:44:35

2        every possible way in which Facebook over the class

3        period has -- has made available information to --

4        to third parties. Like the primary way in which

5        that was done was through the Graph API, and that's                      01:44:51

6        where my -- my focus in being able to answer these

7        questions have been put.

8 Q. Okay. Just -- just to be clear, there  
9 may be other ways in which Facebook made user data  
10 available to third parties other than via platform, 01:45:04  
11 and you are not prepared to testify about those  
12 other ways today; is that accurate?

13 MR. SCHWING: Misstates his testimony.

14 THE DEPONENT: I can talk at a high level  
15 about Facebook generally communicates with -- with 01:45:24  
16 third parties using standard -- standard business  
17 means and practices. But it would be very hard  
18 for -- for me or anyone to answer questions about  
19 the totality in which Facebook has ever exchanged  
20 information with -- with third parties. 01:45:40

21 Q. (By Mr. Melamed) I'm not -- I'm not  
22 asking you to try and capture you. I'm just trying  
23 to understand the confines of what you're prepared  
24 to testify about today.

25	So are there other ways aside -- you	01:45:58
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1 mentioned Facebook platform as a way that Facebook 01:46:01  
2 makes user data available to third parties,  
3 correct?

4 A. Correct.

5 Q. You also mentioned a possibility that 01:46:09  
6 user attach data could be attached to emails, and  
7 you're not prepared to testify about that manner of  
8 providing user data to third parties, correct?

9 MR. SCHWING: No. Misstates his  
10 testimony. 01:46:18

11 THE DEPONENT: As I said, I could talk at  
12 a high level about how Facebook conducts, you know,  
13 conversations with -- with third parties at a high  
14 level, but it would impossible to -- for me or  
15 anyone to -- to know the totality of ways in which 01:46:39  
16 Facebook, over a 15-year period, has made -- made  
17 data available to -- to third parties.

18 Q. (By Mr. Melamed) Why would that be  
19 impossible?

20 A. So in this context, you know, that's -- a 01:46:58  
21 broad range in which a way of essentially thousands  
22 of people over many years have interacted with --  
23 with third parties. I think having a -- a complete  
24 understanding of every example would be -- would be  
25 hard to come by. 01:47:18

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1           As I say, the -- the primary way in which           01:47:20  
2       Facebook shares data with third parties is via the  
3       Facebook developer platform, and I focused my -- my  
4       attention there.

5           I can talk at a high level about           01:47:30  
6       typically how Facebook conducts business with third  
7       parties through with user data may have been  
8       exchanged. But, you know, I don't have a record of  
9       every email that was sent that may have contained  
10      a -- an Excel spreadsheet, for example, containing       01:47:45  
11      user information.

12          Q.    Are there ways other than via platform or  
13       via email that you are aware of that Facebook  
14       provided user data to third parties?

15          A.    I'm not aware of any other major ways in       01:48:07  
16       which Facebook would have shared data with -- with  
17       third parties, no.

18          Q.    Okay. I just want to be clear. You used  
19       the -- the phrase "major ways" in your answer to  
20       that question. Are there any other ways other than       01:48:18  
21       those that you are aware of?

22          A.    Not that I'm -- not that I'm intimately  
23       aware of, no.

24          Q.    Are there any ways you're aware of in any  
25       way?   01:48:33

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5 Q. And let's -- let's return to topic 2CU, 01:49:03  
6 which concerns the format or formats by which  
7 Facebook shared data with third parties -- shared  
8 user data with third parties.

11 Q. And you mentioned the Graph API is the  
12 primary way that Facebook shares user data with  
13 third parties?

16 Q. Okay. We're going to turn to the  
17 Facebook developer platform in a little bit.

23           A.     That's correct. I'm prepared to -- to  
24       testify on -- on how platform integrity teams  
25       attempted to do that. 01:50:26

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1 Q. And then you are prepared as well to 01:50:31  
2 testify about topic 8, correct?

3 A. Would you just mind reading out just  
4 topic 8 for me so I can confirm accurately.

5 Q. No problem. 01:50:43

6 So topic 8 concerns "the methods, tools,  
7 technologies, databases, project management tools,  
8 task lists, and other internal sources Facebook  
9 used to track third parties and data brokers."

10 I understand that you are not prepared to 01:50:57  
11 talk about data brokers, but are you prepared to  
12 talk about the rest of that topic?

13 A. Again --

14 MR. SCHWING: Just -- sorry. Just  
15 quickly. And also advertisers, to the extent 01:51:07  
16 that's not encompassed by data brokers as well,  
17 Matt, just to have the record clear.

18 Q. (By Mr. Melamed) Are you prepared to  
19 talk about topic 8 with the exception of data  
20 brokers and advertisers? 01:51:20

21 A. Yes, I have done my best to prepare for  
22 topic 8.

23 Q. And that includes the four subsections of  
24 topic 8, correct?

25 A. Again, be useful if you'd just read them 01:51:32

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1 out for -- for extra clarity. 01:51:34

2 Q. Sure.

3 So the first subtopic is "the type and  
4 purpose of data and information Facebook received  
5 from third parties."

01:51:43

6 And to clarify, that does not include  
7 from advertisers or data brokers.

8 Are you prepared to answer that subtopic?

9 A. I've done my best to prepare for  
10 subtopic, yes.

01:51:55

11 Q. And topic b, "the type and purpose of  
12 data and information Facebook provided to third  
13 parties"?

14 A. Yes, I've done my best to prepare for  
15 that subtopic too.

01:52:05

16 Q. And "payments consideration, including  
17 actual payments and consideration or promised  
18 payments and consideration that Facebook provided  
19 or received for engaging in exchanges of user data  
20 with third parties" -- again, for clarity, not  
21 including advertisers and data brokers.

01:52:20

22 Are you prepared to answer on that topic?

23 A. I've done my best to prepare for that  
24 topic too -- that subtopic too, yes.

25 Q. And then the final subtopic is "any

01:52:33

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1 evaluation of benefits through Facebook of the 01:52:34  
2 information provided or received or engaging in  
3 exchanges of user data."

4 Are you prepared to testify about that  
5 topic today? 01:52:44

6 A. I have done my best to prepare for that  
7 subtopic, too.

8 Q. Do you have any notes to help with your  
9 testimony today?

10 A. I prepared a couple of pages of 01:53:00  
11 handwritten notes, yes.

12 Q. Okay. And you intend to use those to  
13 help you testify?

14 A. Potentially. It depends on the -- on the  
15 questions I'm asked to answer. 01:53:07

16 Q. You said you personally prepared those  
17 notes?

18 A. That's correct.

19 Q. And how -- how did you go about preparing  
20 those notes? 01:53:24

21 A. Those notes are written from my -- my  
22 notes from the conversations I've with people to  
23 prepare for today and some of documents I've read.

24 Q. Conversations with whom?

25 A. I had a number of conversations with -- 01:53:45

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1 with Facebook employees to prepare for this -- for 01:53:46  
2 the deposition today. I can give you their names  
3 if -- if required.

4 Q. Would you please give me their names.

5 A. Sure. I spoke to Steven Elia. I spoke 01:53:58  
6 to Chad Heaton. I spoke to Tina Cardaci. And I  
7 spoke to -- some of these names I forgot now, but  
8 I -- I could get for you if needed.

9 Q. What would you do to get their names  
10 for -- for us today? 01:54:30

11 A. Look at my calendar. Look at my Outlook  
12 calendar.

13 Q. And what did you speak to Mr. Elia about?

14 [REDACTED]

15 [REDACTED]

16 [REDACTED]

17 Q. Anything else?

18 A. Those are the primary topics we -- I  
19 discussed with Steven.

20 Q. You said they're the primary topics. Did 01:55:06  
21 you discuss anything else with Mr. Elia?

22 A. I don't recall discussing anything else  
23 with Steven beyond the -- the topics I was required  
24 to -- to prepare for today.

25 [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

9 Q. Anything else with Mr. Elia?

10 A. That's about the limit of what I recall 01:55:54  
11 discussing with Steven.

12 Q. I just want to note that you -- as you're  
13 answering these questions, there are a lot of  
14 qualifiers, which is fine, and I'm just asking for  
15 clarification when you provide those qualifiers. 01:56:08

16 So you said "it's about the limit" of  
17 what you discussed with Steven. Do you recall  
18 discussing anything else with Mr. Elia?

19 A. As I sit here today, that's what I recall  
20 discussing with Steven. 01:56:22

21 Q. Okay.

22 What did you discuss with Mr. Heaton?

23 A. We discussed a particular document which  
24 I believe has been marked for the use of it today.

25 Q. Do you recall which document that was? 01:56:36

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1 is still employed by Facebook. 01:57:52

2 Q. And what is his role at Facebook?

3 A. I'm not certain of what his role is  
4 today, I'm afraid.

5 Q. Do you understand what his role was 01:58:02  
6 around the time that he was involved in creating  
7 the document that he reviewed?

8 A. My understanding is he had some role  
9 in -- in finance or business planning, but I  
10 wouldn't want to give any more specifics than that. 01:58:16

11 Q. Why wouldn't you want to give me more  
12 specifics than that regarding his role?

13 A. That's the understanding I have as I --  
14 as I sit here today. I have not reviewed his  
15 internal profile or work history, for example. 01:58:41

16 Q. How long did you speak to Mr. Heaton?

17 A. I spoke to Mr. Heaton for about 25  
18 minutes.

19 Q. How long did you speak to Mr. Elia?

20 A. I speak to Mr. Elia for around 55 01:58:58  
21 minutes.

22 Q. You mentioned you spoke to somebody whose  
23 name I don't think I caught, and I don't want to  
24 get it wrong, so please correct me. I think it was  
25 Ms. Cardaci? 01:59:14

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A. My understanding is this is a document  
that was potentially marked for being exhibited  
today, and I -- I wanted to understand the context  
behind its creation and content.

7                   A.     My understanding is she was either the  
8     author or involved in the authorship of this  
9     document.

12           A.    My understanding she was in some -- some  
13    kind of business planning operations function.

17           A.    I believe my understanding of the  
18   document improved after speaking with her.

21           A.    I don't have any notes relating to that  
22    conversation.

3 Q. And how long did you speak to  
4 Ms. Cardaci?

6 Q. Do you have notes regarding your  
7 understanding of either of the two documents we've  
8 just discussed? And by "the two documents," I mean  
9 the one you spoke about with Mr. Heaton and the one  
10 you spoke about with Ms. Cardaci. 02:02:43

13 Q. Do you have any notes about the documents  
14 at all, whether -- whether or not those notes  
15 relate to your conversations with them? 02:02:54

18 Q. Who else did you talk to in preparation  
19 for today's testimony?

23 Q. Why did you speak to Mr. Molaro?

[illegible]

[illegible]

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■ [REDACTED] ■

■ [REDACTED]

■ [REDACTED]

■ [REDACTED].

5 Q. Do you have any understanding of the time 02:05:27

6 period when Mr. Molaro was involved in the

7 capabilities tool at Facebook?

8 A. I don't have that level of detail of

9 understanding. My understanding is he's a -- he's

10 a data scientist on the platform team and so may 02:05:40

11 have been involved from the beginning of his -- his

12 role on that team to today. But I'm not sure of

13 exactly what his -- what time that is.

14 Q. Do you know when he started on the data

15 science team on platform? 02:05:54

16 A. As I sit here today, I don't have the

17 exact date of -- of his work history, no.

18 Q. Do you have a general understanding of

19 when he started in that role?

20 A. My understanding is he started at least 02:06:08

21 before 2019, but I -- I'm not sure -- again, sure

22 of the exact dates.

23 Q. About how long did you talk to Mr. Molaro

24 for?

25 A. I talked to Molaro, Mr. Molaro, over a 02:06:24

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## HIGHLY CONFIDENTIAL

1 few sessions. Hard to give an exact amount of 02:06:27  
2 time. I'd estimate spending probably 30 to 60  
3 minutes with Mark.

4 Q. Do you have any written notes reflecting  
5 your conversations with Mr. Molaro? 02:06:50

6 A. I have taken some notes about my  
7 conversation with -- my conversations with  
8 Mr. Molaro.

9 Q. And those notes pertain to the  
10 capabilities tool? 02:07:03

11 A. Those notes pertain to -- to parts of the  
12 capabilities tool and other -- other work he was  
13 involved in.

14 Q. What else do the notes concern?

15 A. I took some notes regarding some of the 02:07:23  
16 more modern logging apparatus that Facebook has  
17 today.

18 Q. Is that a singular modern logging  
19 apparatus or are there multiple modern logging  
20 apparatuses that you're referencing? 02:07:46

21 A. Facebook has many different systems  
22 for -- for logging things, and there -- in logging  
23 the platform system, there will be multiple --  
24 multiple systems involved. We talked through a  
25 particular set of data logging structure which was 02:08:08

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1 built more recently. 02:08:14

2 Q. What was that particular set of data  
3 logging structure built more recently that you  
4 spoke to Mr. Molaro about?

5 A. I spoke to Mr. Molaro about some logging 02:08:28  
6 infrastructure that's known as the "Can and Did  
7 tables."

8 Q. Is that C-A-N and D-I-D tables?

9 A. That's correct, C-A-N and D-I-D.

10 Q. Do those stand for anything or are they 02:08:44  
11 just stand-alone terms?

12 A. My understanding is they're stand-alone  
13 terms.

14 Q. Can you describe what the Can table is?

15 A. I'll do my -- my best. My understanding 02:08:57  
16 is that the Can table attempts enumerate the  
17 information that a Facebook platform application  
18 could access or can have access to.

19 Q. Does that include the user -- Facebook  
20 user information that a platform application could 02:09:25  
21 have access to?

22 A. My understanding is it -- it -- it  
23 enumerates the -- the nodes and fields that a  
24 Facebook platform application could have access to,  
25 some of which may include user information. 02:09:43

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## HIGHLY CONFIDENTIAL

1 Q. Do you know when the Can table was 02:09:51

2 created as a tool to provide such logging?

3 A. My understanding it was built in around

4 2019 and became operational sometime in 2020.

5 Q. Do you know if it contains information 02:10:10

6 dating from before it became operational?

7 A. I do not know if it contains information

8 relating to before it became available.

9 Q. Who would know the answer to that

10 question? 02:10:25

11 A. I would ask Mr. Molaro.

12 Q. Do you know whether the Can table could

13 have technologically been created before 2019 or

14 2020?

15 A. Can you help me understand what you mean 02:10:56

16 by --

17 THE DEPONENT: Sorry, Austin. You were

18 going to say something?

19 MR. SCHWING: Just object to form.

20 Go ahead -- go ahead, Simon, if you 02:11:02

21 wanted to clarify something.

22 THE DEPONENT: Yeah. Can you clarify

23 what you mean by "could technologically have been

24 created"?

25 Q. (By Mr. Melamed) Was the Can table 02:11:12

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1 created -- let me withdraw that and restate it. 02:11:14

2 Was there new technology that became  
3 available that enabled Facebook to create the Can  
4 table in or around the time that it became  
5 created -- that it was created? 02:11:28

6 MR. SCHWING: Object to form.

7 THE DEPONENT: The development of these  
8 logging systems themselves would be -- I would  
9 classify as new technology because they involved  
10 code being written. 02:11:46

11 Q. (By Mr. Melamed) Was there anything that  
12 prevented the code that was written for the Can  
13 table from being written at an earlier point in  
14 time?

15 MR. SCHWING: Object to form. 02:12:01

16 THE DEPONENT: These -- these tables deal  
17 with large amounts of information or potentially  
18 deal with large amounts of information, and compute  
19 and storage power in the past was -- was less than  
20 it is today. And so it's -- it wouldn't have been 02:12:18  
21 possible to -- to build these tables in the form  
22 they're in today in -- you know, it is in the past.

23 Q. (By Mr. Melamed) When did the computing  
24 and storage power become sufficient to support  
25 the -- the tables that comprise the Can table? 02:12:46

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## HIGHLY CONFIDENTIAL

1 MR. SCHWING: Object to form. Outside 02:12:54

2 the scope.

3 THE DEPONENT: The -- that's a hard

4 question, I think, for -- for anyone to answer,

5 because the -- the information that's contained in 02:13:04

6 them or -- or the processing required to create

7 them, there's -- there's no like one point in time

8 where they would have suddenly become possible.

9 Data infrastructure and technology has been

10 continually improving over time. 02:13:24

11 Q. (By Mr. Melamed) Would it have been

12 possible to have created the Can tables at any time

13 prior to when they were created, which I believe

14 you said was 2019?

15 MR. SCHWING: Object to form. 02:13:47

16 THE DEPONENT: Again, like -- it's a

17 hard -- hard question to answer. They -- they

18 could have been created in a -- in a different form

19 earlier. Like -- yeah, I'm just not sure I can --

20 I can answer that question in -- in any way. It 02:14:05

21 would be me speculating as to the compute processes

22 required and -- and Facebook's data infrastructure

23 capabilities at -- at the time. That's just --

24 that's a level of detail, I think, is -- is hard

25 for me to answer, I'm afraid. 02:14:20

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## HIGHLY CONFIDENTIAL

1 Q. (By Mr. Melamed) If you wanted to 02:14:22  
2 understand better the answers to that question, who  
3 would you ask?

4 A. Again, my first point of call would be  
5 Mr. Molaro, who seems to be knowledgeable on these 02:14:35  
6 matters.

7 Q. Going back to the content of Can table,  
8 you mentioned that it's -- it identifies which  
9 platform apps can have access to -- to certain  
10 types of data; is that correct? 02:14:59

11 A. My understanding is that the -- the Can  
12 tables attempt to enumerate the information that a  
13 platform app has access to.

14 Q. How does the Can table index the  
15 information that a platform app has access to? 02:15:23

16 A. My understanding is that are there is a  
17 script that runs every day that enumerates through  
18 platform API nodes and methods and attempts to  
19 determine whether or not an app would be able to  
20 access the information provided by those methods. 02:15:51

21 Q. So would it be possible for somebody at  
22 Facebook to look at whether a particular app had  
23 access to a particular method at a point in time  
24 since the Can table has been implemented?

25 A. My understanding is that's the intent 02:16:17

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1 of -- of the technology, although there are likely 02:16:19  
2 caveats and details as to what's possible that --  
3 that I'm -- that I'm not aware of. In -- in  
4 preparation for testimony today, I did my best to  
5 understand these systems at a high level. So 02:16:34  
6 that's a question I -- I don't think I'm able to --  
7 to answer for you, I'm afraid.

8 Q. All right. If you wanted to provide a  
9 more full answer to that question, would you ask  
10 Mr. Molaro? 02:16:51

11 A. Mr. Molaro would be one of the people I  
12 would ask to speak to for -- for more specific  
13 information.

14 Q. Who else would you ask to speak to for  
15 more specific information? 02:17:02

16 A. I would start with Mark.

17 Q. Is there anybody else that -- that you  
18 come to mind who you would speak to other than  
19 Mr. Molaro?

20 A. At this point, no. I would start with 02:17:18  
21 Mr. Molaro and go from there.

22 Q. Do you have any understanding of why the  
23 Can table was developed?

24 A. My understanding is that the Can table  
25 was developed to -- in response to some obligations 02:17:38

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1 in -- in regards to the FTC consent decree. 02:17:45

2 Q. Is that the consent decree as modified in  
3 2019?

4 A. I'm -- I'm not sure specifically exactly  
5 which one it was referring -- was -- was the 02:17:57  
6 results of the -- sorry. Let me answer that  
7 question.

8 I'm not exactly which version of the FTC  
9 consent decree triggered the -- the work to create  
10 these tables. 02:18:11

11 Q. Who would you ask to find out which  
12 version of the FTC consent decree triggered the  
13 creation of the Can and Did tables?

14 A. I would, again, start with Mr. Molaro.

15 Q. What is your understanding of the Did 02:18:35  
16 table? What is the function of the Did table?

17 A. My understanding of -- of the Did table  
18 or the Did tables is that they attempt to identify  
19 the information which a Facebook platform  
20 application has accessed. 02:18:57

21 Q. Do you know when the Did tables were  
22 created?

23 A. My understanding is they were -- they  
24 were built in 2019 and began to come online in --  
25 in 2020. 02:19:15

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1 Q. Were the Can and Did tables created as 02:19:21  
2 part of the same -- let me withdraw that.

3 What was impetus for the creation of the  
4 Did tables?

5 A. My understanding is -- is similarly that 02:19:40  
6 the -- the Did tables were a response to some  
7 enhanced logging requirements and were an update to  
8 previous platform logging infrastructure.

9 Q. Do you know if the Did tables could have  
10 been created before they were created? 02:20:07

11 MR. SCHWING: Object to form.

12 THE DEPONENT: Again, similar to my  
13 answer with the -- with the -- with the Can tables,  
14 I'm not intimately involved in -- in understanding  
15 of their complexity or the resources required to 02:20:28  
16 create them, and so I -- I -- I don't feel like  
17 that's an answer -- a question I can -- I can  
18 answer.

19 Q. (By Mr. Melamed) Who would you ask if  
20 you wanted to know the answer to that question? 02:20:40

21 A. Similar to my previous answers, I would  
22 start with Mr. Molaro and -- and see if those  
23 questions were answerable by him or even answerable  
24 at all.

25 Q. Is -- sorry. Let me withdraw that. 02:21:00

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## HIGHLY CONFIDENTIAL

1 Do you have any understanding of how the 02:21:08  
2 Did tables work?  
3 A. I have --  
4 MR. MELAMED: Let me restate that.  
5 That's a terrible question. 02:21:16  
6 Q. (By Mr. Melamed) Do you have any  
7 understanding of how Facebook users inside at  
8 Facebook could -- could use the Did tables to find  
9 information?  
10 MR. SCHWING: Object to form. 02:21:29  
11 THE DEPONENT: I -- I understand that  
12 certain Facebook employees would be able to query  
13 those tables using internal data querying  
14 infrastructure. The way in which they queried  
15 those tables would be or could be in numerous ways. 02:21:50  
16 Q. (By Mr. Melamed) Do you know whether  
17 they could query the Did tables by app to  
18 understand all of the user information that an app  
19 did access during the period of times -- time for  
20 which the table exist? 02:22:11  
21 A. I -- I -- my understanding is that these  
22 tables do contain an app ID and -- and therefore  
23 that's theoretically possible, but I have not  
24 queried the table myself, and so I'd be speculating  
25 as to exactly what -- what's possible with these 02:22:32

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1 tables. 02:22:34

2 Q. Do you understand whether the Did table  
3 could be queried by the type of information  
4 accessed so that somebody could determine all of  
5 the apps that determined -- that accessed a 02:22:49  
6 particular type of information?

7 MR. SCHWING: Object to form.

8 THE DEPONENT: Yeah, I'm -- I'm not  
9 familiar with the precise structure of those  
10 tables, so I'd be speculating as to -- as to 02:23:02  
11 exactly what -- what is possible with them.

12 Q. (By Mr. Melamed) And who would you ask  
13 to figure out what was possible in terms of  
14 querying the Did table -- tables?

15 THE DEPONENT: Similar. I would start 02:23:19  
16 with Mr. Molaro and see where he goes from there.

17 Q. (By Mr. Melamed) Prior to the creation  
18 of the Did tables, did Facebook use any method to  
19 track the user information that apps did access?

20 MR. SCHWING: Object to form. 02:23:43

21 THE DEPONENT: Facebook has a number of  
22 systems for logging API usage, and those logs would  
23 identify which API calls an app made and would  
24 include the method that was called, and -- and that  
25 could in some cases be linked to type of 02:24:15

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1 information. 02:24:19

2 So those -- those form of logging did  
3 exist previously.

4 Q. (By Mr. Melamed) So in that answer you  
5 talked about API calls and method calls, correct? 02:24:29

6 A. I likely mentioned API calls and methods,  
7 yes.

8 Q. Are you aware of any tracking that  
9 existed before the Did tables that tracked the  
10 information that was returned when an API call was 02:24:52  
11 made?

12 A. I'm not aware, as I sit here today, of --  
13 of any system which tracked the response -- the  
14 detail response to an API request.

15 Q. In preparing for today, did you 02:25:17  
16 investigate whether there existed any system that  
17 tracked the response to API requests?

18 A. Yes. I spoke to Mr. Molaro and Mr. Elia  
19 about whether or not we logged API responses.

20 Q. And the answer was that Facebook did not 02:25:48  
21 log API responses?

22 A. My understanding is that there was --  
23 there's not -- there's no API -- API responses were  
24 not regularly logged as part of the standard  
25 platform logging infrastructure. 02:26:04

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## HIGHLY CONFIDENTIAL

1 Q. Were they ever logged as part of the 02:26:12  
2 logging infrastructure?

3 A. It's hard -- were they -- were they ever  
4 logged over which time period? Like ever?

5 Q. During -- during the time period at issue 02:26:30  
6 in this case. And as a general matter going  
7 forward for -- for the questions today, if you  
8 don't understand, please clarify.

9 A. Sure.

10 Q. But as a general matter, my questions 02:26:38  
11 will be from 2007 to present.

12 And so here we're talking about 2007 up  
13 until the creation of the Did tables.

14 Were API responses ever logged between  
15 2007 and the creation of the Did tables? 02:26:58

16 MR. SCHWING: Object to form.

17 THE DEPONENT: It's -- it's possible that  
18 an engineer or data scientist may have implemented  
19 logging for a debugging, for example, or -- or --  
20 or some other form of investigation. 02:27:18

21 But from talking to the people who -- who  
22 know this infrastructure well, API responses were  
23 not routinely logged or stored.

24 Q. (By Mr. Melamed) Were API calls  
25 routinely logged prior to creation of the Can 02:27:40

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1 tables? 02:27:44

2 A. The infrastructure to log API calls will  
3 have evolved and changed over time, so hard to give  
4 a comprehensive answer of all parts of the -- of  
5 the time period. But broadly, from my involvement 02:28:02  
6 in platform, yes, API calls were -- were logged in  
7 in various forms.

8 Q. When did you become -- first -- let me  
9 withdraw that.

10 When -- on what date are you first aware 02:28:22  
11 that API calls were routinely logged?

12 A. I'm not sure of the precise date as to  
13 which Facebook began logging API calls. Again,  
14 the -- the information -- the -- the logging  
15 infrastructure will have and did change 02:28:46  
16 significantly over the kind of 15-year -- year  
17 period that you're asking about.

18 Q. Are you aware of how API calls were  
19 logged in 2007?

20 A. I'm not aware precisely how API calls 02:29:01  
21 were logged in 2007.

22 Q. Were API calls regularly logged in 2007?

23 A. I don't know whether or not API calls  
24 were logged routinely in 2007.

25 Q. Who would know that information? 02:29:22

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A. I'm not sure who would know that information. The -- data infrastructure that Facebook has changed significantly over time, and many of the people involved in -- in building it back then would no longer be at the company. In fact, I'm not aware of many people who are still at the company from back in that time.

02:29:28

02:29:38

8	Q. Were API calls regularly logged in 2008?
---	---

9           A. I don't know for certain whether API  
10 calls were regularly logged in 2008. 02:29:56

11 Q. Who would know whether API calls were  
12 regularly logged in 2008?

13           A.     Similar to my previous answer, I'm not  
14     sure who would know. I would ask the -- I would  
15     start by asking the data science team to see if  
16     they knew that or the answer to that question,  
17     which is a relatively specific question.

18 Q. Who on the data science team would you  
19 ask?

20           A.     At this point, I would start with Mark                 02:30:28

21     Molaro, similarly, and see if he knew or knew the

22     right person.

23	Q. Were API calls regularly logged in 2009?
----	---

24           A.     Similarly, I'm -- I'm unaware of whether  
25     or not API calls were regularly logged in 2009.

## HIGHLY CONFIDENTIAL

1 Q. Were API calls regularly logged in 2010? 02:30:55

2 A. I am unaware as -- I'm not -- I'm not

3 fully confident in whether or not API calls were

4 logged in -- in 2010. This is when the beginning

5 of my involvement with platform begins, and I 02:31:15

6 recall -- again, in a personal capacity how I

7 recall like seeing information about API calls

8 being made by apps, but the precise nature of what

9 was logged and -- and when that began is -- is not

10 something I am able to testify about today. 02:31:36

11 Q. What were the tools you recall

12 encountering in 2010 that reflected API calls?

13 A. I recall a tool called Page Stats, but I

14 want to be -- I want to be clear here that this is

15 a long time ago, and it's hard to be -- for me to 02:32:03

16 be confident that I was involved in viewing

17 platform logging in -- in late 2010. I joined the

18 company in September. So I -- I'm not sure I can

19 give a confident answer to that.

20 Q. What kind of information did Page Stats 02:32:27

21 reflect?

22 A. I don't recall exactly what -- what

23 information Page Stats would have -- would have --

24 would have requested -- would have stored.

25 Q. Did Page Stats reflect information on an 02:32:46

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1 app-by-app basis? 02:32:52

2 A. Again, I -- I'm not entirely confident in  
3 how Page Stats worked or the information that was  
4 contained in it, and so I'd be speculating, I'm  
5 afraid. 02:33:06

6 Q. Does the information that was retained in  
7 Page Stats from 2010 -- sorry. Let me withdraw  
8 that and restate it.

9 Was the information that was reflected in  
10 Page Stats in 2010 retained by Facebook? 02:33:21

11 A. I'm not aware exactly what information  
12 from legacy logging systems has been retained and  
13 what hasn't. Again, that answer -- I did plenty of  
14 work to prepare for today's testimony. That's a --  
15 that's a very detailed question that I'm afraid I 02:33:44  
16 can't give an accurate answer to today.

17 Q. Were API calls regularly logged in 2011?

18 A. Again, I -- I can't confidently say what  
19 was being logged in -- in 2011, but my recollection  
20 from the time is that, yes, API calls were being 02:34:07  
21 logged in in some way.

22 Q. What is your recollection of the way in  
23 which API calls were being logged in 2011?

24 A. My understanding is that API calls were  
25 being logged in to a data warehouse, now known as 02:34:30

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## HIGHLY CONFIDENTIAL

1 Hive, and there was another system that came into 02:34:41  
2 existence, but I'm unclear exactly when.

3 Q. What is the other system that you're --  
4 that you're referring to?

5 A. The other system I recall using to query 02:34:55  
6 API calls was -- is a system called Scuba. But  
7 exactly when Scuba became -- came online and its  
8 relation to these other tools is not something I  
9 have a detailed lineage of, I'm afraid.

10 Q. Do you know whether the information 02:35:17  
11 reflecting API calls that were recorded in Hive  
12 exist for the entirety of the time that that -- let  
13 me withdraw that and restate it.

14 Has Facebook retained all the information  
15 in Hive regarding API calls? 02:35:40

16 MR. SCHWING: Object to form. Outside  
17 the scope.

18 THE DEPONENT: Again, I'm not -- I'm not  
19 sure exactly what Facebook has retained from which  
20 systems across a 15-year -- across a 15-year time 02:35:55  
21 period.

22 This data retention and storage is -- is  
23 a very special subject. I prepared to testify at a  
24 high level on these -- on these topics, but that  
25 level of detail is something I -- I don't have on 02:36:10

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1 hand today, I'm afraid. 02:36:14

2 Q. (By Mr. Melamed) Okay. If you wanted to  
3 see the API calls that a particular app made in  
4 2011, do you know if you could do that?

5 A. I do not -- I do not know if that could 02:36:23  
6 be done.

7 Q. And who would you ask whether that can be  
8 done?

9 A. I would -- I would ask Mr. Molaro, again,  
10 as to whether or not I was -- that was possible 02:36:35  
11 or -- or -- or achievable.

12 Q. And you said you're not sure of -- well,  
13 let me -- let me ask this as a question.

14 What was the difference between the API  
15 call information that was stored in Hive and the 02:36:51  
16 API information that was stored in Scuba?

17 A. There's likely numerous differences which  
18 I -- I would not be able to enumerate all of the  
19 differences. One common difference is that the  
20 information stored in Hive became available several 02:37:08  
21 days, one or two, after the actual APIs were being  
22 called, whereas Scuba allowed a more real-time view  
23 into -- into what apps were doing.

24 Q. Let me return quickly to a question about  
25 the Can and Did tables. 02:37:35

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## HIGHLY CONFIDENTIAL

1                   Where in Facebook's data infrastructure                   02:37:39

2           are the Can and Did tables stored?

3           A.    My understanding is they're stored in

4           Facebook's Hive data warehouse.

5           Q.    Do you know if they have a different name                   02:38:08

6           within the Hive data warehouse, a particular table

7           name other than the "Can" and "Did"?

8           A.    Those -- those tables probably -- the

9           names of those tables will contain other -- other

10          words and terms which I'm not fully familiar with.                   02:38:24

11          So, yeah, the names of the tables are likely

12          more -- more descriptive.

13          Q.    But you're not aware of them, of what

14          those names are, as you sit here today?

15          A.    I don't recall the specific and full                   02:38:39

16          names of those tables, no.

17          Q.    I think we left off at 2011 where I'd

18          asked whether API calls from a particular year

19          were -- were tracked.

20                   Is that -- is that your recollection too?                   02:39:08

21          A.    My -- my understanding is that in --

22          in -- it's likely that API hits were being tracked

23          in some form in 2011, but in precisely what form,

24          I -- I don't recall, as I might be speculating.

25          Q.    Is there a difference between the term                   02:39:28

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## HIGHLY CONFIDENTIAL

1 "API hit" on one hand and the term "API call" on 02:39:30  
2 another?

3 A. Generally, the term "API hits" and "API  
4 calls" are synonymous and would typically be used  
5 interchangeably. 02:39:48

6 Q. And what -- what do those terms  
7 reference?

8 A. Those terms reference where -- where an  
9 application, which could be a first-party or a  
10 third-party application, for example, make a 02:40:06  
11 request to Facebook's API.

12 Q. Would an application have to receive  
13 approval or -- let me withdraw that.

14 Would an application have to receive  
15 permission from Facebook before making an API call? 02:40:23

16 A. Not necessarily. The API exists as -- as  
17 a server on the Internet, and it's possible to call  
18 those APIs without some form of authentication.  
19 But the information returned most likely in that  
20 circumstance would -- would be an error. It 02:40:56  
21 depends on exactly the form of API call that's  
22 being made and exactly what -- what information is  
23 supplied at request time is a -- a degree of ways  
24 that that works.

25 Q. You mentioned that an API that was called 02:41:17

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1 without some form of authentication would likely 02:41:26

2 return an error; is that right?

3 A. Well, the -- there are -- there are many

4 ways -- there's lots of different APIs. I think

5 their exact behavior differs from API to API, and 02:41:42

6 the response provided will differ from API to API,

7 and the information required to be provided by the

8 third-party developer in order to get a successful

9 response will also change from API method to API

10 method. 02:42:06

11 Q. If an error was returned as a result of

12 an API call, what form would that error take? Is

13 there a common form that that error would take?

14 A. There are two common ways in which APIs

15 generally signal error states. The first is an 02:42:30

16 HTTP error code, and the second is returning an

17 error object as part of the API response.

18 Q. Can you be more specific about each of

19 those? Like what the HTTP error code say?

20 A. There's a list of standard HTTP error 02:42:55

21 codes provided by the W3c, and an API provider

22 would generally emit an API code -- sorry -- an

23 HTTP error code that indicates the type of error

24 that the API had encountered.

25 Q. You said a -- an API provider would 02:43:23

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1 typically use one of these standard HTTP -- HTTP 02:43:31  
2 error codes. Did Facebook generally -- I'm sorry.  
3 Did Facebook respond with these typical  
4 HTTP error codes when a standard error code was --  
5 That question got very messed up. Let me 02:43:56  
6 restate it.  
7 Did HTTP -- did Facebook use the standard  
8 HTTP error codes in response to calls that were not  
9 permitted?  
10 MR. SCHWING: Object to form. 02:44:20  
11 THE DEPONENT: Again, the Facebook APIs  
12 have -- have changed in -- in form over -- over the  
13 time period we're talking about here, and the error  
14 returned would differ. The way errors would be  
15 expressed would differ depending on the -- the type 02:44:41  
16 of API being used or the API being used and -- and  
17 the method and how it had been implemented.  
18 My recollection is that -- that the --  
19 that the Facebook -- that the Facebook APIs over  
20 time would have emitted HTTP error codes in some 02:44:56  
21 cases as one way of signaling errors.  
22 I recognize the answer is -- is -- is  
23 heavily -- is a little complex, but the -- the --  
24 my understanding is at times HTTP error codes will  
25 have been one of the ways in which some Facebook 02:45:23

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1 APIs signaled error states. 02:45:26

2 Q. (By Mr. Melamed) At those times, were  
3 the HTTP error codes the typical HTTP error codes?

4 A. Again --

5 MR. SCHWING: I'm sorry. Object -- 02:45:38  
6 object to form.

7 Go ahead, Simon.

8 THE DEPONENT: Similarly, it -- it's hard  
9 to give a full and complete answer there because of  
10 the number of APIs that existed and how they 02:45:50  
11 changed over time.

12 It would typically be a good practice for  
13 an engineer implementing an API, if they were  
14 returning an HTTP error code, to return the one  
15 that most closely matched the situation that the 02:46:07  
16 API had encountered.

17 Q. (By Mr. Melamed) Did Facebook maintain a  
18 list of the error codes it returned from  
19 unsuccessful API calls?

20 A. The HTTP error code mechanism, there's 02:46:27  
21 only a standard set of HTTP error codes that the  
22 W3c did -- like -- codifies, and so that would  
23 generally be the list of error codes that an  
24 engineer would be able to choose from.

25 Q. You also mentioned error objects that 02:46:48

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1 could get returned, correct? 02:46:51

2 A. That's correct, yes.

3 Q. Did Facebook maintain a list of the error  
4 objects that could be returned?

5 A. Facebook maintained some lists of errors 02:47:07

6 that could be returned, but I'm unclear -- you  
7 know, how to say when that list came into existence  
8 and whether or not it was possible for an engineer  
9 to emit an error that was more custom than one of  
10 the predefined ones. 02:47:32

11 Q. Does Facebook presently maintain a list  
12 of error objects that can be returned?

13 A. I am unaware of whether or not Facebook  
14 maintains a list of API error objects that --  
15 that -- that could be returned. 02:47:52

16 Q. Are you aware of whether Facebook ever  
17 retained a list of error objects that could be  
18 returned?

19 A. I recall in the past a system which was  
20 used to enumerate potential error states and 02:48:08  
21 control the API response in those circumstances,  
22 but I couldn't say when that system started or --  
23 or stopped and -- and whether or not it was fully  
24 comprehensive of -- of the API responses that could  
25 be returned. 02:48:35

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1 Q. What was the name of that system? 02:48:37

2 A. I don't recall the precise name of that  
3 system. I'm -- I'm going from memory here on a --  
4 on a system that I -- that I recall, but  
5 couldn't -- couldn't give a very confident answer 02:48:55  
6 as to the name of.

7 Q. Do you have any recollection of what the  
8 name could have been or could have included?

9 A. The system I'm referencing here in my  
10 head I think may have been called "Coded 02:49:12  
11 Exception," but -- but, again, I -- I'm not  
12 entirely confident of -- of the precise name of  
13 that system.

14 Q. If you wanted to know more about the  
15 system, whatever it was named, who would you go to? 02:49:24

16 A. My first act would be to search for the  
17 name of that in Facebook's internal tools and  
18 systems and then speak to someone on the platform  
19 team as to whether or not it was relevant.

20 Again, I want to be clear: I'm trying to 02:49:49  
21 give here the best answers I can based on my -- my  
22 understanding and my memory. And I'm trying also  
23 be clear when I'm doing that from my personal  
24 memory and experiences versus a more general  
25 answer. 02:50:07

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1 Q. Is there any individual you would ask 02:50:09  
2 about this system that was used to reference the  
3 error states that could be returned?

4 A. I would -- I would ask Steven Elia and  
5 see if he knew or knew who knew. 02:50:28

6 MR. SCHWING: Matt, we've been going for  
7 longer than an hour. Would this be a good time for  
8 a break?

9 MR. MELAMED: Yeah. Let me just ask a  
10 few more questions and then we'll take a break, if 02:50:39  
11 that works for you.

12 MR. SCHWING: Okay.

13 Q. (By Mr. Melamed) Is that okay,  
14 Mr. Cross?

15 A. Yeah, that's fine. 02:50:47

16 Q. Do you have any recollection about the  
17 time period? I know you don't have a specific  
18 recollection about this system that was used to  
19 track error states, but do you recall any point in  
20 time when it was in use? 02:50:57

21 A. I -- I don't want to give an answer  
22 that -- that -- that's based on very, very poor  
23 memory of this. This is a -- you know, a system  
24 that I didn't have deep understanding or  
25 integration with from -- from, you know, eight or 02:51:17

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1 nine years ago. So I -- I'm just not sure I can 02:51:21  
2 give an accurate answer as to -- as to when it was  
3 sourced or in use.

4 Q. And you said you don't believe that -- am  
5 I correct that you do not believe the system is 02:51:38  
6 still in use today?

7 A. I do not know whether or not the system  
8 is in -- is in use today.

9 Q. But to find that out, you would ask  
10 Mr. Elia? 02:51:52

11 A. I would ask Steven, Mr. Elia, if he had  
12 an answer to that question of that specificity,  
13 yes.

14 Q. All right.

15 MR. MELAMED: Before we go off the 02:52:11  
16 record, Mr. Schwing and Mr. Cross, I'd like to ask  
17 for the notes that you are -- that you have taken  
18 in order to prepare for today. If you can produce  
19 those to us, I'd appreciate it, and doing so  
20 immediately so that we can review them and use them 02:52:25  
21 during today's questioning.

22 Mr. Schwing, if that's okay with you or  
23 if that's something you want to discuss off the  
24 record?

25 MR. SCHWING: Yeah. Why don't we take a 02:52:38

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1 look at the notes just to make sure there's nothing 02:52:39  
2 that's -- you know, for example, in terms of being  
3 privileged. And we can address that further, Matt.  
4 I think we can probably work it out.

5 MR. MELAMED: The only note I would make 02:52:52  
6 to that point is if there -- if there is something  
7 that is attorney-client privileged that Mr. Cross  
8 is using to testify from, it's no longer  
9 attorney-client privilege, and that will be waived.

10 But happy to deal with that off the 02:53:06  
11 record and, of course, take a look at those. But  
12 we would just ask that you do so as quickly as  
13 possible so we can use them during today's  
14 testimony.

15 MR. SCHWING: Yeah, I -- I understand the 02:53:17  
16 request. We'll take a look at the notes and we can  
17 follow up with you.

18 MR. MELAMED: Okay.

19 Happy to go off the record.

20 THE VIDEOGRAPHER: Okay. We're off the 02:53:24  
21 record. It's 2:53 p.m.

22 (Recess taken.)

23 THE VIDEOGRAPHER: We're back on the  
24 record. It's 3:18 p.m.

25 Q. (By Mr. Melamed) Before the break we 03:18:46

1 | were talking about the Can and Did tables. 03:18:48

2 Do you remember that?

3 | A. Yeah, I remember talking about those.

4	Q. Does the Can table graph calls that were	
5	made by an app toward individual users' data?	03:19:03

6           A.     No.  My understanding is that the Can  
7     tables track the types of information that -- that  
8     the API nodes and fields that an app could access.

9 Q. Does not -- let me withdraw that.

10	What about the Did tables? Do the Did	03:19:35
11	tables track to an individual's user data that was	
12	accessed?	

13           A.    My understanding is that the -- the Did  
14   tables include information about -- that has been  
15   shared with -- has been accessed by an app.   I                               03:19:52  
16   can't say for certain if it includes the -- the  
17   user IDs whose information was -- was accessed.

18 Q. Is the answer the same regarding whether  
19 the Did tables include a replacement user ID or  
20 other identifying information that would link 03:20:18  
21 the -- the data that was accessed to an individual  
22 user?

23           A.     I -- I -- I'd be -- as I sit here today,  
24       you know, not entirely sure of the precise  
25       information that's logged in that -- in that table.                      03:20:40

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[illegible]



[illegible]

[illegible]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

8 Q. Any other examples you can think of of  
9 the ways in which information was emitted over time  
10 changed?

03:28:53

11 A. Another example I can think of is the way  
12 that user authentication was performed within  
13 Canvas applications on the Facebook developer  
14 platform.

15 I recall in the original version, the  
16 access token and user IDs were emitted to a  
17 developer in a query string redirect in response to  
18 their authorization request, and I recall at some  
19 point that that was changed to passing those  
20 informations in the fragment of the URL rather than  
21 the query string.

03:29:12

03:29:34

22 Q. Do you recall when that change occurred?

23 A. I think that change occurred in -- in  
24 around 2010, 2011, but I'm -- I'm not 100 percent  
25 confident on the date, but around that time.

03:29:54

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[illegible]

A. At a high level, the Facebook API has developed over -- you know, the Graph API in particular has developed over -- over several

03:31:37

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1 years, and there have been new fields added, edges 03:31:40  
2 and objects taken away, and permissions changed as  
3 well.

4 So a whole range of -- of ways in which  
5 information was -- was made available or the way -- 03:31:56  
6 you know, what apps had access to what has changed  
7 over time.

8 Q. I want to go back to the list you just  
9 gave and ask a few questions about each example.

1 [REDACTED] [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] [REDACTED] [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] [REDACTED] [REDACTED]

[illegible]

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[illegible]

21 MR. SCHWING: Outside the scope of the  
22 deposition. Object to form.

23 THE DEPONENT: So policies are a --  
24 you know, a way of Facebook telling developers what  
25 Facebook thinks is -- i's appropriate or not with 03:42:17

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1 the information. So -- and, again, as I said, like 03:42:22  
2 I'm not an expert in what Facebook's policies did  
3 and did not permit at any given time.

4 So a policy -- a platform policy is a  
5 written document. That doesn't, you know, prevent 03:42:32  
6 a user doing something or -- sorry. Let me back  
7 up.

8 Doesn't prevent a developer from -- from  
9 doing something, but it -- it's a clear statement  
10 that that is not something Facebook would -- would 03:42:47  
11 have approved of, if indeed there was a policy  
12 written to that effect.

13 Q. (By Mr. Melamed) Thank you. That helps.

14 I think this is a good transition to  
15 topic 2d, where it's my understanding that Facebook 03:43:05  
16 has identified somebody else to testify about 2d,  
17 except that you are going to testify about it today  
18 concerning a technical aspect relating to the  
19 platform integrity team, and the topic is "how  
20 Facebook ensured third parties' use of data and 03:43:26  
21 information is limited to the use case."

22 So can you tell me what is the technical  
23 aspect related to platform integrity team  
24 concerning how Facebook ensured third parties' use  
25 of user data they acquired from Facebook was 03:43:41

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1 limited to the use case? 03:43:45

2 A. So there's a number of techniques that  
3 the platform integrity teams would have used to  
4 attempt to identify developers who were accessing  
5 or using data in -- in -- in different ways, in 03:44:04  
6 ways that was against policy.

7 One of those examples is that Facebook  
8 had a mechanism for reading the privacy policy and  
9 term of service URLs to make sure the -- the  
10 developer had provided for their application to 03:44:31  
11 ensure that a -- a valid document existed at the  
12 URLs that had been provided. So that's one of the  
13 mechanisms.

14 Q. Was that a technology that was developed  
15 to ensure that a privacy policy existed at the URL 03:44:52  
16 provided?

17 A. Yes, that's technology that was developed  
18 to ensure that where a developer runs an  
19 application that there was a privacy policy and  
20 terms of use document in existence. 03:45:09

21 Q. Did that tool evaluate the content of  
22 the -- the privacy policy in any way?

23 A. My understanding is that that tool did  
24 not evaluate the content, but there are other  
25 mechanisms in -- in place by -- by Facebook that 03:45:30

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1 would evaluate the -- the content of the -- of the 03:45:33  
2 privacy policy.

3 Q. Okay. So just focusing on that tool for  
4 the purpose of this question.

5 If the privacy policy at the URL provided 03:45:46  
6 by an app said our privacy policy is there is no  
7 privacy in your data, that tool that you are  
8 referencing would have confirmed that a privacy  
9 policy existed; is that -- is that accurate?

10 MR. SCHWING: Object to form. Incomplete 03:46:10  
11 hypothetical.

12 THE DEPONENT: My understanding is that  
13 that tool certainly would have said that a privacy  
14 policy existed, but then the evaluation of that  
15 privacy policy would have been performed by a 03:46:25  
16 different team.

17 Q. (By Mr. Melamed) Okay. Were each of the  
18 privacy policies or apps that access user data on  
19 the platform evaluated by the -- by anyone at  
20 Facebook? 03:46:47

21 MR. SCHWING: Outside the scope of the  
22 deposition. Object to form.

23 THE DEPONENT: My understanding is that  
24 privacy policies of third-party applications have  
25 been audited by operations and policy teams at 03:47:04

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1 Facebook, but exactly which apps they evaluated the 03:47:11  
2 policies for and how they evaluated them is -- is  
3 not -- not something I'm an expert in. I think  
4 Ally Hendrix is probably best placed to talk about  
5 how Facebook operationalized the review of privacy 03:47:29  
6 policies and terms of use statements by developers.

7 Q. (By Mr. Melamed) Okay. And just to be  
8 clear, that is not -- the qualitative review of  
9 privacy policies is not the technical aspect  
10 related to platform integrity team that you were 03:47:42  
11 prepared to testify about today; is that right?

12 A. The example I've given here is about a  
13 technical mechanism for ensuring a privacy policy  
14 and terms of use statement existed for -- for an  
15 app developer, not how those documents were -- 03:48:02  
16 evaluated by -- by the operations teams and policy  
17 teams at Facebook.

18 Q. What happened when Facebook determined  
19 that no privacy policy existed at the URL provided  
20 by an app? 03:48:22

21 A. Different things would have happened  
22 depending on what the app -- which app it was. If  
23 it was an app where -- there was a partnerships  
24 team at Facebook that was responsible for the  
25 relationship with that developer, and typically the 03:48:42

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1 operations team would ask the partnerships team to 03:48:45  
2 reach out to the developer to find out why the  
3 privacy policy or terms of use statement didn't  
4 exist and ask them to -- to provide one or update  
5 the -- the URL that was available. 03:48:59

6 For other apps that may not have had a  
7 managed partner, the developer operations team  
8 would have or could have placed a moratorium on the  
9 application, but exactly which moratorium they  
10 would have -- have chosen to use, I'm -- it likely 03:49:19  
11 depended on a number of factors.

12 Q. And are you prepared to testify today  
13 about those factors?

14 A. I can give you some examples of the types  
15 of moratoriums that would be applied, but exactly 03:49:36  
16 which one would be applied would depend -- would  
17 have differed over time and a number of different  
18 factors.

19 Q. What are some examples of the moratoriums  
20 that would have applied -- could have applied? 03:49:49

21 A. So one example is that Facebook  
22 application could be placed into sandbox mode or  
23 developer mode, which prevents users who are not  
24 listed as developers of the application itself from  
25 interacting with it. 03:50:12

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1 Q. And what are other examples of -- of 03:50:16  
2 different types of moratoriums that could have been  
3 imposed if no privacy policy was found?

4 A. So other examples, again, of moratoriums  
5 that Facebook has employed as -- as our -- as part 03:50:28  
6 of our -- as here, includes deleting the app  
7 itself, so the app is no longer available on the  
8 platform.

9 And then another example of a moratorium  
10 would be preventing the app from being able to 03:50:46  
11 publish to Facebook.

12 As I said, exactly which moratoriums were  
13 applied in the case of -- of a privacy policy or  
14 terms of use document not being available is  
15 something the developer operations team and policy 03:51:02  
16 team are best placed to -- to talk about. I can  
17 give you examples of the -- the example -- the  
18 moratoriums I'm aware of, having talked to the  
19 people involved, but exactly which ones are applied  
20 is -- is something that -- that -- that operations 03:51:17  
21 and policy teams are best placed to -- to answer.

22 Q. Are there records at Facebook regarding  
23 apps for which no privacy policy was found by the  
24 technology you described?

25 A. This technology will have -- would have 03:51:39

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1 ruled in logs as to apps -- the word "detected" as 03:51:45  
2 not having one of these documents in their -- a  
3 valid document in their -- existing for their  
4 application.

5 But the retention, you know, exactly 03:52:00  
6 what's in those -- those logs and the -- the  
7 duration for which they've been retained is -- is,  
8 you know, something I can't -- I can't answer as --  
9 as we sit here today. But there would have been  
10 logs as part of the existence of the system, yes. 03:52:14

11 Q. Do you know what those logs were called?

12 A. They would have been tables relating to  
13 the name of the system in -- in Hive, most likely.  
14 But I -- I -- you know, I don't know the exact name  
15 of -- of the tables that were -- that were -- that 03:52:34  
16 were created to log this information.

17 Q. Does this technology that you described  
18 whereby Facebook would evaluate whether there  
19 existed a value -- a valid document at the URL  
20 provided by the developer for its privacy policy, 03:53:03  
21 does this technology still exist today?

22 MR. SCHWING: Object to form.

23 Q. (By Mr. Melamed) Can I just restate the  
24 end of that.

25 Does the technology describe -- is the 03:53:19

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1 technology you described still used by Facebook 03:53:21

2 today?

3 MR. SCHWING: Same objection.

4 THE DEPONENT: My understanding is that

5 that technology is still in place as part of our 03:53:31

6 efforts to ensure developers are representing their

7 apps and their behaviors to use as appropriately.

8 Q. (By Mr. Melamed) And am I correct in

9 understanding that you do not know the name of the

10 table that records -- that logs the information 03:53:51

11 about apps that do not have a valid document at the

12 URL provided for their privacy policy?

13 A. So in preparation for -- for today, I

14 spoke to, you know, people involved in -- in these

15 efforts about, in general, the techniques and tools 03:54:07

16 which are applied. This was one of the examples

17 that was -- you know, we talked about. You know,

18 so I have a high-level understanding of -- of that

19 system and its existence, but the precise name of

20 the table in -- in Hive, that's -- that's something 03:54:29

21 I'm afraid I don't have in my head today.

22 Q. And you mentioned -- you used the phrase

23 "valid document," but the tool automatically --

24 there's -- let me see if I'm describing this

25 correctly. 03:54:50

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1                   So Facebook wrote code -- engineers at                   03:54:50  
2       Facebook wrote code to determine whether a valid  
3       document existed at the URL provided by the  
4       developers for their privacy policy; is that an  
5       accurate statement of the -- of the way the tool                   03:55:04  
6       worked?

7                   MR. SCHWING:   Object to form.

8                   THE DEPONENT:   That matches my high-level  
9       understanding of -- of how this tool worked, yes.

10                  Q.     (By Mr. Melamed)   Do you know what                   03:55:17  
11       qualified as a valid document in that context?

12                  A.     The system would likely have checked for  
13       a number of things.   For example, the -- whether or  
14       not when we -- when the system accessed that URL,  
15       whether or not an error code was returned by the --                   03:55:39  
16       the server.

17                        So that would be certainly one of the  
18       things that that the system was checking for.

19                  Q.     Are you prepared to testify regarding  
20       what constituted a valid document in this review                   03:55:56  
21       process?

22                  A.     So, again, I can give you my high-level  
23       understanding of how the system works from -- from,  
24       you know, talking to the -- to the people involved.  
25       And in preparation for today, we talked about a                   03:56:08

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1 large number of -- of different systems at -- at 03:56:13  
2 the company. So I can give my high-level  
3 understanding of how that -- of how that system  
4 worked.

5 My understanding is it would have 03:56:25  
6 accessed the URL that was provided by the  
7 developer, looked for a number of things that would  
8 have determined, in Facebook's estimation, as to  
9 whether or not that -- that document was considered  
10 valid or not. 03:56:41

11 Q. Are you familiar with the use of the text  
12 lorem ipsum as placeholder text for when designing  
13 or writing a document?

14 A. Yes, I'm aware of the -- the practice of  
15 using lorem ipsum. 03:56:58

16 Q. Are you -- do you know whether the tool  
17 you're describing which looked at the URL that a  
18 developer had provided for a privacy policy would  
19 have determined that a valid document existed if  
20 the privacy policy URL linked to text that had 03:57:23  
21 lorem ipsum placeholder text?

22 A. So the precise nature of how this system  
23 behaved is -- and whether or not it would have  
24 returned a valid document or not, determination  
25 in -- in that respect, is -- a level of detail I -- 03:57:48

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1 I -- I don't have in my head right now. So hard -- 03:57:52  
2 hard for me to answer that question in that level  
3 of specificity, I'm afraid.

4 Q. I'm -- I'm not trying to get you to  
5 testify beyond your knowledge. I'm just -- the 03:58:05  
6 indication we were provided is that you were  
7 prepared to talk about a technical aspect relating  
8 to platform integrity team, and you identified this  
9 as the technical act -- a technical aspect you were  
10 prepared to identify. So I'm just trying to 03:58:23  
11 understand the extent of your testimony.

12 MR. SCHWING: And, Matt -- and I want you  
13 to continue your questioning, so I'll be brief  
14 here.

15 Just for the record, we -- we did 03:58:31  
16 indicate in the letter that -- that he would  
17 generally speak to this issue to give you  
18 information on it with the idea that could then,  
19 you know, learn about it, if you need to ask other  
20 witnesses about it, et cetera. 03:58:44

21 But I want to make the record clear that  
22 we did use the word "generally," I believe.

23 Q. (By Mr. Melamed) Are there other  
24 technical aspects relating to the platform  
25 integrity team that you -- that you are prepared to 03:58:57

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1 testify about today concerning how Facebook ensured 03:59:00  
2 third parties' use of user data they acquired from  
3 Facebook was limited to the use case?

4 A. So another example of -- of a technique  
5 that the platform integrity team used was a system 03:59:18  
6 or set of systems that evolved over time that  
7 looked for unusual patterns of API calling  
8 behavior.

9 So that's another -- another type of  
10 example. 03:59:39

11 Q. How were unusual patterns of API calling  
12 behavior defined?

13 Let me restate that.

14 What constitutes an unusual pattern of  
15 API calling behavior? 03:59:56

16 A. The answer to that is somewhat -- in the  
17 definition of the integrity teams, one of the  
18 challenges of working in -- in a -- in a space like  
19 this is the adversarial nature of it, and so some  
20 developers -- you know, what -- what is unusual or 04:00:21  
21 is considered unusual by the integrity team is a  
22 set of things that changes over time and will be  
23 different from context to context.

24 Typically and generally, though, what the  
25 team would be looking for is, for example, cases 04:00:37

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1 where apps were regularly hitting rate limits or 04:00:42  
2 apps were making a high number of API calls for a  
3 set of methods that -- that they were -- that they  
4 were calling the API.

5 So those are two examples of what might 04:00:58  
6 be considered anomalous.

7 Q. What are the rate limits?

8 A. So in the context of the Graph API? Is  
9 that what you mean by -- how would you like me to  
10 answer generally in -- in -- can you help me 04:01:16  
11 understand the kind of answer -- what kind of  
12 answer you're expecting, generally or specifically  
13 as it applies to the Graph API?

14 Q. In the context of the answer you just  
15 provided, where you said that one way a platform 04:01:27  
16 integrity team looked at unusual API calling  
17 behavior was by looking at unusual or unusual rate  
18 limits; is that right?

19 A. More that if an app was making a lot of  
20 API calls to -- to a specific method or against the 04:01:51  
21 API and hitting -- hitting rate limit.

22 Q. Okay. Thank you for the clarification.

23 What did you mean by "rate limits" in  
24 that context?

25 A. So in that context, a rate limit refers 04:02:05

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1 to a -- a number of times that an API -- an app, 04:02:08  
2 third-party application, can call an API within a  
3 given time window. The exact definition of that  
4 is -- is -- will have changed over time, but at a  
5 high level, that's -- that's what we mean by rate 04:02:30  
6 limit.

7 Q. And who sets or establishes the rate  
8 limits?

9 A. The platform integrity team would likely  
10 have been responsible for -- for -- for setting the 04:02:46  
11 rate limits or being -- certainly being consulted  
12 for how they were -- how they were set.

13 Q. And who at the platform integrity team  
14 would you speak to to understand how rate limits  
15 were set over time at Facebook during the time 04:03:07  
16 period of this case?

17 A. Given the -- the -- the time period of  
18 the case is so wide, I would start by trying to  
19 speak to somebody in the -- in the platform  
20 integrity team today to see if they had more 04:03:29  
21 information. I -- I have information and have a --  
22 implemented at various times, but, you know, the --  
23 the mechanism of rate limiting across -- across 15  
24 years would have -- would have changed.

25 Q. And who would you reach out to today if 04:03:48

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1 be -- would have been developed over time -- for 04:05:34  
2 example, machine-based models and so on.

3 Q. Do you know when the first versions of --  
4 the first version of this tool was built by  
5 Facebook? I'm not speaking outside the context of 04:05:52  
6 this case.

7 A. Sure. This is one of the things that  
8 people have -- have -- when I've talked to the  
9 people involved in this, this is certainly  
10 something they -- they reference from around the -- 04:06:09  
11 in existence around the 2011, 2012 time frame. So  
12 my understanding is that such a system was in  
13 place, you know, even a basic one then. So that's  
14 the -- that's the kind of earliest example I've --  
15 I've -- I've heard about when talking to the people 04:06:31  
16 involved in preparation for today.

17 Q. How were the reports or notifications  
18 that there were API calls -- high levels of API  
19 calls for the number of users on a particular app,  
20 what kind of reports were generated reflecting the 04:06:48  
21 apps that were on that list?

22 A. My understanding from -- again, from  
23 talking to the people involved is that one of the  
24 forms that that would have taken is -- is a  
25 dashboard that -- that was made available to -- to 04:07:08

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1 developer operations, or DevOps, that they could 04:07:11  
2 look at and see a list of apps by, you know --  
3 you know, that were making a large number of API  
4 calls relative to the number of authenticated  
5 users. 04:07:32

6 Q. So putting this together, is it right to  
7 say that around 2011 or 2012 -- and you're not  
8 specific as to time period, but generally those --  
9 those years -- there was a dashboard that would --  
10 that was available to DevOps that identified apps 04:07:49  
11 making a high level of API calls for the number of  
12 users those apps had; is that right?

13 A. Right. The -- the -- from my  
14 understanding the -- yes, around -- around that  
15 time, possible -- possibly later, the exact form 04:08:12  
16 that that information would have taken would -- the  
17 way in which it would have been made available to  
18 DevOps may -- may have changed.

19 But, yes, the -- the -- there were --  
20 there was a mechanism in place to allow DevOps to 04:08:26  
21 see apps that were making an unusual number of API  
22 calls relative to the number of users using the  
23 app.

24 Q. Were there -- sorry. Let me withdraw  
25 that. 04:08:42

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1 Are there records that still exist of the 04:08:43  
2 apps that were making a high number of API calls  
3 for the number of users starting in the 2011 or '12  
4 time period?

5 MR. SCHWING: Object to form. 04:09:00

6 THE DEPONENT: So my understanding is  
7 this -- this -- certainly logging from 2012  
8 onwards, as I understand it, of the API calls, the  
9 apps were making to particular methods.

10 So I know that that information has 04:09:21  
11 been -- has been stored and, in fact, made  
12 available in this case, as I understand it.

13 It's -- it's possible that there is a way  
14 to reconstruct whether or not those calls were  
15 unusual relative to number of apps, but again, 04:09:42  
16 exactly what Facebook's data retention policy is in  
17 this -- is -- is hard to that level of detail to  
18 know.

19 So it may be possible to recreate those  
20 dashboards, but -- but I can't for certain -- I 04:09:56  
21 can't with certainty say that that would be  
22 possible today.

23 Q. (By Mr. Melamed) You -- you mentioned  
24 from 2012 forward it's your understanding that  
25 information has been provided in this case 04:10:06

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1 reflecting the logging of API calls to particular 04:10:07

2 methods by particular apps, correct?

3 A. That's correct, yeah.

4 Q. What -- do you know what the name -- is

5 there a name for that information or that table or 04:10:19

6 whatever it is?

7 A. I think I'm thinking of here is the API

8 hits method R table, which I -- correctly styled is

9 API\_method -- API\_hits\_method\_R.

10 And I apologize, Rebecca, for making you 04:10:40

11 have to write that down.

12 Q. Okay. And have you heard that referred

13 to as "the method table," just as a stand-alone

14 two-word name without the underscores?

15 A. I've heard that referred to as "the 04:10:58

16 method table."

17 Q. Is that your understanding of what is

18 being referred to when people talk about the method

19 table?

20 A. That's my understanding of what's being 04:11:04

21 referred to when people talk about the method

22 table.

23 Q. Going back to the -- the technology that

24 exists to check whether privacy policies or valid

25 documents exist at the URL for each app. 04:11:21

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1 Do you recall talking about that? 04:11:24

2 A. Yeah, I recall talking about that.

3 Q. And there were some questions you weren't

4 able to answer about whether valid -- what the

5 meaning of a valid document was, for example, 04:11:31

6 correct?

7 MR. SCHWING: Object to form.

8 THE DEPONENT: The precise nature of how

9 that system determines whether a document is valid

10 or not is a -- a level of detail I don't have right 04:11:42

11 now and will have changed over time.

12 Q. (By Mr. Melamed) Who would you talk to

13 to figure out how that had changed over time, how

14 what a valid document was had changed over time?

15 A. I would attempt to speak to somebody on 04:12:01

16 the platform integrity team to see if they could

17 answer a question with that level of specificity.

18 Q. And who would you go to now if you wanted

19 to start that inquiry?

20 A. I would start with Dan Xu. 04:12:15

21 Q. Are there other technical aspects

22 relating to the platform integrity team concerning

23 how Facebook ensured third parties' use of user

24 data that they acquired from Facebook was limited

25 to the use case that you are prepared to testify 04:12:34

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1 about? 04:12:36

2 A. Another example that -- that I've learned  
3 about by preparing for this case is a system which  
4 looks for apps which are similar to those which  
5 have been enforced upon by our platform policy and 04:12:54  
6 operations teams.

7 Q. Do you know when that technology was  
8 implemented?

9 A. So this activity has likely been done in  
10 some form for -- for quite some time. Early in 04:13:24  
11 its -- early in -- earlier in the gestation, this  
12 would have been a more manual process, and my  
13 understanding that since a -- an automated way of  
14 doing it is now -- is now in place.

15 And that's been developed more recently 04:13:44  
16 using machine learning to train to detect apps  
17 which are behaving similar -- similarly to apps  
18 which have previously been enforced upon by our  
19 operations team.

20 Q. When did that more automated process 04:14:02  
21 commence?

22 A. The precise date, I -- I don't have  
23 access to the precise date that -- that -- that  
24 that activity -- that that automated system came  
25 into being. From talking to the people involved, 04:14:19

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1 you know, a very simple automated -- some very 04:14:22  
2 simple automated processes were likely in use in  
3 around 2012, 2013. But, again, the specifics,  
4 I'm -- you know, I just -- I don't have that level  
5 of detail available to me right now. 04:14:36

6 Q. And in saying you don't have that level  
7 of detail available to you now, you can't -- are  
8 you able to speak about that, what you referred to  
9 as a "simple automated process" that you thought  
10 was in -- in place in 2012 or 2013 time period? 04:14:55  
11 Can you talk about how that simple process worked?

12 MR. SCHWING: Object to form.

13 THE DEPONENT: So I -- I can talk more  
14 concretely about the -- I talk more about the  
15 systems that are in place today as I understand 04:15:15  
16 them, because in preparation for -- for today's  
17 case, most of the people I spoke to had, you know,  
18 knowledge of the most recent systems in place.

19 Q. (By Mr. Melamed) And when you're talking  
20 about the systems in place today, how long have 04:15:33  
21 those systems been in place?

22 A. Again, exactly -- exactly which systems  
23 are in -- in -- in place today and -- and when they  
24 were started, they were like -- I -- again, I don't  
25 have the -- the exact dates as to when, you know, 04:15:55

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1 those systems were first implemented or how it 04:15:59  
2 operated over time. I've, you know, done the best  
3 job I can to prepare. I talked to a number of  
4 people who -- who were involved in these systems,  
5 but the precise dates in which they existed is -- 04:16:12  
6 is not something I have -- recall.

7 Q. Without precision, are you able to say  
8 about when the systems that you were prepared to  
9 testify about today started being used at Facebook?

10 A. The exact lineage of -- and when these 04:16:37  
11 systems came into being, like I -- I don't have the  
12 precise -- the precise timelines, I'm afraid. And  
13 as I say, I think these -- these systems overlap  
14 and, you know, were developed over a long period of  
15 time, and so hard to give very specifics about 04:16:56  
16 exactly what the behavior was and what the major  
17 milestones of evolution are.

18 Q. Do you know if the systems that are in  
19 place today were implemented after March 2018?

20 A. It's likely, given that there's a -- a 04:17:22  
21 team who works on this, that they've been  
22 constantly developing -- developing these kinds of  
23 systems. And so, yes, there -- there will be  
24 systems in place today that were not in operation  
25 around 2018. 04:17:39

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1 Q. You mentioned that there are multiple 04:17:46  
2 systems in this context of systems to identify apps  
3 that behave similarly to those that have been  
4 kicked off the platform, correct?

5 A. The -- the -- it's likely there are 04:18:05  
6 different -- different parts to the system that --  
7 that looks for anomaly detection and similarity  
8 detection. So hard -- again, like, I can talk  
9 about these in -- high-level concept of what they  
10 intend to do and -- and how they -- what their 04:18:23  
11 functionality -- you know, how they are used.

12 The detail of the technical  
13 implementation is something best left to an  
14 engineer.

15 At a high level, the job of the 04:18:36  
16 assistants is to look for an application or  
17 applications which the -- the policy and operations  
18 team have -- have enforced upon and then look for  
19 things like patterns of API calling behavior which  
20 are similar and things like IP addresses and where 04:18:55  
21 those calls are coming from. Do we see other apps  
22 which are -- are coming from a similar data center  
23 or similar IP range.

24 And then one of the other examples would  
25 be whether or not these apps have developers in 04:19:12

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1 common, user -- users developers, and are there 04:19:17  
2 similarities between those user developers.

3 So pretty typical in an integrity context  
4 is the -- you know, the people using -- the people  
5 trying to develop bad apps are also trying to be 04:19:30  
6 not detected, and therefore the systems in place to  
7 detect them need to evolve over time in order to  
8 stay ahead of -- of those patterns in behavior.

9 So precisely how -- you know, how these  
10 systems are architected and whether or not -- which 04:19:49  
11 different pieces there are is, you know, a level of  
12 engineering detail. From -- from a product  
13 perspective, those are the -- the goals of the  
14 system and the types of things that those systems  
15 are looking for in order to identify other apps 04:20:07  
16 that might be behaving inappropriately.

17 Q. To be clear, I'm not asking for  
18 engineering-level detail of how exactly how this  
19 happened. If I were to look for that information,  
20 who would I ask? Or if you were to look for that 04:20:24  
21 level of information, who would you reach out to?

22 A. Again, I would speak to one of the -- one  
23 of the engineers on the platform integrity team to  
24 understand, you know, that -- that level of  
25 specificity as to exactly how the systems are 04:20:45

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1 implemented. 04:20:47

2 Q. Is there a particular person you would  
3 reach out to as being somebody you would start  
4 with?

5 A. I would start with Dan Xu again. 04:20:59

6 Q. Now, you mentioned, I think, three  
7 factors -- and I just want to make sure I have  
8 them -- that this tool would have looked at.

9 So one is pattern of API calls, and  
10 another is IP addresses, and another is developers 04:21:14  
11 in common.

12 Do I have that right?

13 A. Those are three examples I -- I  
14 mentioned. My understanding is that the -- the --  
15 there are likely more factors involved, and a 04:21:29  
16 machine learning system would be looking for a  
17 range of factors.

18 Q. Are you aware of any other factors as you  
19 sit here right now?

20 A. As I sit here right now, no. So I -- I 04:21:44  
21 can imagine some of what they might be, but I think  
22 that -- that would be speculating.

23 Q. Do you know when Facebook started looking  
24 at the commonalities in API calling behavior  
25 between apps that had been kicked off platform and 04:22:02

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1 apps that were presently on platform? 04:22:06

2 A. Yeah. Again, I talked to people involved  
3 in -- in integrity who -- who were involved in a  
4 number of ways of identifying apps that were  
5 potentially doing unusual behavior. The -- looking 04:22:23  
6 for apps that were similar to apps that misbehaved  
7 is something that was likely going on manually in  
8 around 2013, 2014, possibly earlier.

9 But that's when the people I -- I spoke  
10 to talked about beginning to -- to perform that 04:22:45  
11 kind of activity.

12 Q. Do you know who was involved in that  
13 manual review that was happening around 2013, 2014  
14 time period?

15 A. I don't know exactly who was involved. I 04:23:06  
16 mean, platform integrity team changed over time,  
17 too.

18 The -- there were people I spoke to  
19 who -- who were involved in the platform integrity  
20 team around that time. 04:23:23

21 Q. Who are those people?

22 A. So one name is Eugene Zarashaw.  
23 Zarakhovsky was his previous name. So I think he  
24 was -- he was involved.

25 Another person that was involved is 04:23:42

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1 someone called Jonathan Gross. 04:23:45

2 And then the -- exactly how that  
3 information is -- was -- was used to enforce upon  
4 applications is, again, I think a set of questions  
5 for the developer ops and policy teams. I think 04:23:57  
6 Ally Hendrix is -- is placed to answer those kinds  
7 of questions.

8 Q. Do you know who led the development of  
9 the automation of this review of -- and by "this  
10 review," I'm talking about the process by which 04:24:16  
11 Facebook was looking for similar apps to those that  
12 had been kicked off platform.

13 A. The specific name of the -- of the people  
14 involved, no, I don't have -- you know, I don't  
15 have their names. 04:24:29

16 As I've said, like this is a -- this is a  
17 concept that -- that will -- that evolved over --  
18 over time and, you know, in its earliest phases  
19 would have been a rules-based system or very simple  
20 rules-based system and today is -- is -- my 04:24:46  
21 understanding is today is a much more -- more  
22 complex system employing machine learning.

23 I -- I -- I know the name of the -- of  
24 the engineering manager involved more recently, so  
25 I -- I, you know, I -- I recall meeting him 04:25:05

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1 recently to talk about this stuff. I can't think 04:25:11  
2 of his name right now. I think Jay is his first  
3 name, I think.

4 Q. If you remember that at any point during  
5 the deposition, just please stop and say, "I 04:25:24  
6 remember the name of the person."

7 A. I will. As -- as I've said, in order  
8 to -- to prepare for the broad topics to cover  
9 today, you know, I had to do a lot of prep across a  
10 number of areas. 04:25:41

11 Q. Are there other technical aspects  
12 relating to the platform integrity team concerning  
13 how Facebook ensured third parties' use of user  
14 data they acquired from Facebook was limited to the  
15 use case? 04:25:53

16 A. So another technique that I -- I'm aware  
17 has been employed is our security teams looking for  
18 app scoped user IDs in data dumps that may be  
19 available to various developers. So that's a --  
20 another -- another common technique that -- that 04:26:29  
21 was employed, as I understand it, at various times.

22 Q. And just so we don't have to keep going  
23 back to the same question, I'd like to get out as  
24 many of these examples -- you know, this is  
25 something that you're here to testify about, so I 04:26:43

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1 just want to get the list of the examples of 04:26:48  
2 technical aspects relating to the platform  
3 integrity team concerning how Facebook ensured  
4 third parties' use of user data they acquired from  
5 Facebook was limited to the use case. 04:26:57

6 So you just mentioned security teams, and  
7 let's just try and list all of the other ways that  
8 you're aware of, if you can do that.

9 A. So another mechanism that is in place  
10 today is app review. And so app review is a 04:27:18  
11 mechanism by which Facebook asks developers to  
12 explain why they want access to a particular piece  
13 of information, and then Facebook uses technical  
14 means to determine whether or not they can, indeed,  
15 request that information from -- from users. So 04:27:43  
16 that's another example.

17 Q. Any other examples?

18 A. Another example of how Facebook attempted  
19 to ensure that information was not being  
20 inappropriately shared with fourth parties, in this 04:28:05  
21 case, people that the third-party developer had a  
22 relationship with, is technical mechanisms to look  
23 for user IDs or access tokens in referrers to  
24 social plug-ins embedded on third-party developer  
25 websites. 04:28:32

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1           That's a lot of information, but these           04:28:37  
2           things are sometimes complex to explain.

3           Q.    Are there any other technical aspects  
4           related to the platform integrity team concerning  
5           how Facebook ensured third parties' use of the data       04:28:49  
6           they acquired from Facebook was limited to use  
7           case.

8           A.    Those are the main ones that -- that  
9           we've -- that were -- were talked through with me  
10          when I prepared for this. We talked about app       04:29:08  
11          scoped IDs and page scoped IDs. We talked about  
12          permissions -- actually, no, we haven't talked  
13          about permissions. We should talk about  
14          permissions real quick.

15          So permissions is a mechanism, again, by       04:29:24  
16          which Facebook attempts to ensure that information  
17          is only available to third parties within the  
18          context of a particular use case.

19          Q.    Let's go through these ones that you just  
20          listed. I just want to understand. Again, I'm not       04:29:43  
21          asking for the technical mechanisms by which they  
22          worked; I'm just asking for time period, general  
23          implementation.

24          So you mentioned first the security teams  
25          that search for app scoped user IDs in data dumps,       04:29:58

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1 correct? 04:30:04

2 A. My understanding is that's a -- that's an  
3 activity that's been performed periodically.

4 Q. Starting about when?

5 A. I don't have the exact dates as to -- as 04:30:15

6 to when that activity was -- was done. Again, app  
7 scoped user IDs began to be emitted in -- in

8 April 2014, and so after that is when it would have

9 been, you know, technically possible to --

10 you know, for -- for those IDs to start to show up 04:30:36

11 in third-party data dumps.

12 Q. When you're talking about these

13 third-party data dumps, are you talking about --

14 Have you heard the phrase "dark web"?

15 A. I have heard the phrase "dark web." 04:30:51

16 Q. Are you -- are you talking about data

17 made available by actors on the dark web?

18 A. My understanding from, you know, having

19 spoken to people involved in this is -- the

20 information may have been available over the dark 04:31:10

21 web, but there are other ways in which that

22 information may have been available as -- as well.

23 So it's not -- not just limited -- my understanding

24 is it's not just limited to -- to those sources.

25 Q. Your understanding is this -- this 04:31:26

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1 necessarily only started after app scoped IDs were 04:31:28  
2 implemented.

3 But do you know about when this process  
4 actually started?

5 A. I don't have the precise dates as to -- 04:31:39  
6 as to -- as to when this -- this activity was --  
7 was done, no.

8 Q. And so far in your description you've  
9 mentioned that this is searching for app scoped  
10 user IDs in data dumps. 04:31:53

11 Do you know if there's been any effort to  
12 look for canonical IDs in data dumps?

13 A. My understanding is that the same efforts  
14 would have looked for canonical user IDs, although  
15 the challenge there is that which apps they were 04:32:16  
16 emitted from is hard to determine.

17 Q. Do you know whether this effort by the  
18 security teams as it relates to the canonical IDs  
19 was implemented before app scoped IDs started to be  
20 used? 04:32:41

21 A. I'm -- I'm -- I think -- yeah, I'm not  
22 aware of -- specifically if this activity was  
23 happening -- happening beforehand. It's -- it's --  
24 it's likely it was happening in some form, but I --  
25 I'd be speculating as to exactly what -- what was 04:33:13

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1 happening in the security teams. 04:33:17

2 Q. Let's move on to app review. You  
3 described the process whereby -- or can you  
4 describe briefly what app review is, and then you  
5 could also say when it started. 04:33:30

6 A. App review is a process by which Facebook  
7 requires app developers to request permission to  
8 use certain features which are known as "reviewable  
9 features" or request certain permissions which are  
10 known as "reviewable permissions" in their 04:33:56  
11 application.

12 Developers ask -- explain to Facebook why  
13 they want these features and why they want to  
14 request these permissions from users, and then  
15 Facebook determines whether or not, indeed, they 04:34:17  
16 can use those features and can request those  
17 permissions from users.

18 So that's the process of app review. And  
19 app review was instituted for new apps on  
20 April 30th, 2014. 04:34:32

21 Q. Did apps that existed prior to  
22 April 30th, 2014 ever go through app review?

23 A. Yes. The way app review was instituted  
24 is that the apps created for 2014 -- I'm sorry --  
25 April 30th, 2014 had to go through app review in 04:35:02

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[REDACTED]

[REDACTED]

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[REDACTED]

18 Q. Another technical aspect relating to  
19 platform integrity team concerning how Facebook  
20 ensure third parties' use of user data they  
21 acquired from Facebook was limited to use case that  
22 you mentioned is looking for user IDs or access  
23 tokens in refers to social plug-ins on third-party  
24 developer websites?

25 Is that -- did I get that right?

04:38:53

04:39:12

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1 A. Yes, that's pretty -- pretty close, yes. 04:39:16

2 Q. Was that an automated or a manual  
3 process?

4 A. My understanding is the detection was an  
5 automated process, and when the detection flagged, 04:39:31  
6 there was user IDs or access tokens potentially  
7 being admitted, then that was flagged to developer  
8 operations to do an investigation.

9 Q. Do you know when that process started,  
10 when Facebook started using the process? 04:39:54

11 A. My understanding is that that was  
12 something built around 2011 or 2012.

13 Q. Do you know who was responsible for  
14 building it around 2011 or 2012?

15 A. The platform integrity team were 04:40:22  
16 responsible for -- for building that as -- as --  
17 as, you know, it pertains to exactly their -- their  
18 scope, making sure the information is -- is  
19 appropriately shared with third parties and so on.

20 So I -- I know that they were the team 04:40:39  
21 responsible for -- for building it.

22 Q. Do you know if records exist of the  
23 developers that were detected through this  
24 automated process as having provided user IDs or  
25 access tokens in refers to social plug-ins on 04:41:03

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1 third-party developer websites? 04:41:07

2 A. This system would have logged that app  
3 time in order to en -- allow operations team to  
4 perform an investigation, whether or not that  
5 information has been retained, you know, eight or 04:41:25  
6 so years later, Facebook standard data retention  
7 policies, you know, are shorter than that.

8 So it's possible that information has  
9 been retained. I wouldn't know, I'm afraid.

10 Q. Does that effort continue today, the 04:41:45  
11 automated effort to look for such information?

12 A. My understanding is technical changes  
13 were made to -- to how access tokens and user IDs  
14 were emitted to third -- third parties that means  
15 that -- that detection is no longer needed. 04:42:04

16 Q. Do you know when those technical changes  
17 were made such that Facebook determined the  
18 detection was no longer needed?

19 A. I want to say those -- those changes were  
20 roughly made in 2013, '14. But, again, that's -- 04:42:22  
21 that's my understanding of the rough timelines.

22 Q. When these -- this automated tool  
23 detected the existence of user IDs or app tokens  
24 as -- as described, did the tool identify the  
25 individuals -- the individual Facebook users or IDs 04:42:48

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HIGHLY CONFIDENTIAL

1 that had been detected? 04:42:52

2 A. I -- I am afraid the precise nature in  
3 which that tool operated ten years ago, I have a  
4 high-level understanding, which is that it detected  
5 whether or not access tokens and user IDs were -- 04:43:10  
6 being emitted by an app.

7 Whether or not that tool logged a  
8 specific user IDs is a -- is a -- a level of  
9 detail, I -- I can't answer, I'm afraid.

10 MR. SCHWING: Matt, we've been going for 04:43:30  
11 a while now. I understand you're kind of working  
12 on a -- you know, a bit of the topic here, but I  
13 wanted to check in with Mr. Cross to make sure  
14 he's -- how he's doing, if he needs a break, and  
15 kind of, you know, think about when we're going to 04:43:43  
16 stop for our next break.

17 THE WITNESS: Yeah, I'd appreciate a bio  
18 break, if that's -- if that's possible.

19 MR. MELAMED: That is. I just wanted to  
20 follow up with a question about permissions, which 04:43:53  
21 you had mentioned as, I think, the last of these  
22 techniques. If we can finish those questions now  
23 before the break, that would be great. If not, if  
24 you need the break, I can return to it after. It's  
25 up to you. 04:44:05

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1 THE DEPONENT: I'll take a break now, if 04:44:06  
2 that's okay.

3 MR. MELAMED: Okay.

4 THE DEPONENT: And then come back to that  
5 question. 04:44:12

6 MR. MELAMED: Okay. We can go off the  
7 record.

8 THE VIDEOGRAPHER: Okay. We're off the  
9 record at 4:44 p.m.

10 (Recess taken.) 04:44:17

11 THE VIDEOGRAPHER: We're back on the  
12 record. It's 4:57 p.m.

13 Q. (By Mr. Melamed) Mr. Cross, the last of  
14 the techniques we were talking about related to the  
15 technical aspects of how the -- how platform 04:57:29  
16 integrity team ensured third parties' use of user  
17 data they acquired from Facebook was limited to the  
18 use case or permissions.

19 Do you remember that?

20 A. Accessing permissions, yeah. 04:57:46

21 Q. When were permissions implemented?

22 A. Permissions as we -- as they're known  
23 today were first introduced in May 2010.

24 Q. And what do you mean by "known today"?

25 A. So these are permissions in the -- in the 04:58:13

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[illegible]



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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

11 MR. SCHWING: Object to form.

12 THE DEPONENT: My -- my goal here is to  
13 give you examples of what was done, and in attempt  
14 to do that, I spoke -- I've spoken to people  
15 involved in this over -- over periods of time, and  
16 I think I've given several examples of how the  
17 platform integrity team operated and the things  
18 they did. It's possible they did other things that  
19 I am not aware of, that I was unable to uncover in  
20 my preparation for today.

05:05:00

05:05:21

21 So I don't think I can rule out other  
22 things were done. It's possible other things were  
23 done that I'm -- I'm not aware of. My job -- my  
24 job here is to do the best job I can giving you  
25 examples of things that were -- that were done that

05:05:38

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1 were relayed to me as part of my preparation for  
2 today.

05:05:40

3 Q. (By Mr. Melamed) Let me restate the  
4 question, then, based on that answer.

█ [REDACTED] █

█ [REDACTED]

█ [REDACTED]

█ [REDACTED]

█ [REDACTED]

█ [REDACTED]

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[illegible]

HIGHLY CONFIDENTIAL

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

7 Q. (By Mr. Melamed) I just want to read for  
8 the record the representation that was made by  
9 counsel before talking to you about this subject.

10 MR. MELAMED: And I'm not doing this to 05:09:29  
11 start a fight, Austin. You know, obviously you can  
12 respond.

13 But the paragraph that was in the letter  
14 written on June 3rd specifically regarding your  
15 preparation to testify was with respect to topic 05:09:41  
16 2d, which relates to "how Facebook ensured third  
17 parties' use of such data or information was  
18 limited to the use case." For avoidance of doubt,  
19 Facebook again writes that "while Ally Hendrix is  
20 prepared to testify on most aspects of topic 2d, 05:09:59  
21 there is a technical aspect relating to the  
22 platform integrity team that Mr. Cross is prepared  
23 to testify about. We are uncertain why you are  
24 pushing back on this issue. As mentioned above,  
25 Facebook is simply using its best efforts to 05:10:11

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1 identify the best possible witnesses to testify on 05:10:14  
2 plaintiffs' topics."

3 So I just want to state for the record  
4 that that's why we were pushing on these topics.  
5 That's why I've asked the follow-ups that I asked. 05:10:23  
6 And we will seek additional testimony regarding  
7 these topics so that we get the answers to those  
8 questions.

9 MR. SCHWING: And, Matt, I will not argue  
10 with you, and I'm happy to address that, you know, 05:10:39  
11 at -- at an appropriate time. We've indicated in  
12 correspondence that Mr. Cross will be prepared to  
13 discuss -- and I'm quoting -- "generally the steps  
14 the platform integrity team undertook to detect  
15 misuse." You're, of course, free to follow up with 05:10:58  
16 further discovery.

17 I appreciate you raising your concerns.  
18 I'm happy to speak with you about it and -- and --  
19 and work through the issues.

20 MR. MELAMED: Thank you. I just -- I 05:11:12  
21 appreciate that. I just want to note that the word  
22 "generally" is not in the -- uttered in the  
23 reference.

24 SPECIAL MASTER GARRIE: This is Special  
25 Master Garrie. Both parties have been heard. 05:11:21

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[illegible]



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[illegible]

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[illegible]

[illegible]



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[illegible]

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[illegible]

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[REDACTED]

24

25

/////

05:41:14

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1 (Exhibit 425 was marked for 05:41:14  
2 identification by the court reporter and is  
3 attached hereto.)

4 MR. MELAMED: Just introduced what's been  
5 marked as Exhibit 325 -- I'm sorry. 425. My 05:41:41  
6 mistake.

7 Q. (By Mr. Melamed) And just for the  
8 record, Exhibit 425 was provided to us, to  
9 plaintiffs, by counsel for Facebook. I don't  
10 anticipate that you've seen this before, Mr. Cross. 05:41:55  
11 It's possible you have, but I just want to ask you  
12 a couple questions about it.

13 And it's probably going to be easiest if  
14 I share my screen. It's a very large -- a very  
15 lengthy Excel spreadsheet. You can go ahead and 05:42:13  
16 look at it. I don't mean to cut you off from  
17 familiarizing yourself from it.

18 THE DEPONENT: Sorry. Where would I  
19 access this? Are you just going to share your  
20 screen or -- 05:42:33

21 MR. MELAMED: Okay. I will share my  
22 screen. But it should be in marked exhibits on --  
23 in Exhibit Share for deposition of Simon Cross,  
24 Volume 4.

25 Austin, are you able to see it? 05:42:46

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1 MR. SCHWING: I can. 05:42:51

2 Simon, do you have the Egnyte page up?

3 THE DEPONENT: Yes, I do. Exhibit 3 --

4 MR. SCHWING: The top -- you should see

5 things that say Simon Cross. It would be the top 05:43:02

6 one, I believe.

7 THE DEPONENT: Yeah, that's it.

8 MR. MELAMED: Yes. As I mentioned, this

9 is really, really long. I'm going to direct you

10 very specifically to a few lines. I just want to 05:43:13

11 understand if you're able to provide answers. If

12 you're not, that's fine.

13 So I'm going to scroll down to line

14 36,608.

15 (Discussion off the stenographic record.) 05:43:28

16 MR. SCHWING: Matt, if you're trying to

17 demonstrate your -- your diligence by saying you've

18 reviewed 36,000 rows of this, I am impressed.

19 MR. MELAMED: I appreciate that you think

20 that I reviewed 36,000 rows of this table that was 05:43:56

21 provided, I think, last night.

22 MS. WEAVER: I'll take credit for it.

23 SPECIAL MASTER GARRIE: Hey, Counsel.

24 Can I ask a question?

25 What are the column values for A? 05:44:23

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4	Is that okay?
---	---------------

5                   SPECIAL MASTER GARRIE:  Yeah.  If you                   05:44:37  
6       want to get to the bottom, just hit control page  
7       down or control N.

The diagram illustrates a vertical timeline from 1990 to 2010. The timeline is marked with years in 5-year increments. Horizontal bars of varying lengths and colors (black, grey, white) extend from the timeline, representing different periods or events. The bars are arranged in a way that suggests a sequence of events over time.

Year	Event/Period
1990	Start of timeline
1991	Black bar
1992	Black bar
1993	Black bar
1994	Black bar
1995	Black bar
1996	Black bar
1997	Black bar
1998	Black bar
1999	Black bar
2000	Black bar
2001	Black bar
2002	Black bar
2003	Black bar
2004	Black bar
2005	Black bar
2006	Black bar
2007	Black bar
2008	Black bar
2009	Black bar
2010	End of timeline

HIGHLY CONFIDENTIAL

6 Do you see that?

7 A. I do see that.

8 Q. Do you know if these reflect the Did

9 table that you testified about before?

10 MR. SCHWING: I'm just going to state for 05:46:40

11 the record that we didn't receive these in advance

12 of the deposition. I understand you represented

13 that this was provided last night, Matt, but just

14 to be clear, the witness has not had a chance to

15 look through this. 05:46:51

16 MR. MELAMED: Let me -- you're right,

17 Austin. Let me correct the record. This was not

18 received last night. It was received Thursday.

19 That was my mistaken.

20 I am only asking about this because of 05:46:58

21 Mr. Cross's testimony before about the Did table.

22 It's just -- you know, and I understand that

23 Mr. Cross likely has not reviewed this, but I can

24 confirm that.

25 So I'll ask that, but I understand -- I 05:47:12

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[illegible]

1 [REDACTED] [REDACTED]  
2 MR. MELAMED: Thank you. You can put  
3 that exhibit away if you have it open.

4 Q. (By Mr. Melamed) We were talking before  
5 we returned to the Did table for a minute about the 05:50:34  
6 manner by which third parties could access user  
7 data, and we talked about the rest API and the FQL  
8 API, and we've talked periodically about  
9 Open Graph, correct?

10 A. Well, we talked about the Graph API. We 05:50:49  
11 haven't talked about Open Graph.

12 Q. Thank you for the correction. We talked  
13 about the Graph API.

14 During what period of time did third  
15 parties access user data via Facebook login? 05:50:59

16 MR. SCHWING: Object to form.

17 [REDACTED] [REDACTED]  
18 [REDACTED]  
19 [REDACTED] [REDACTED]  
20 [REDACTED] [REDACTED] [REDACTED]  
21 [REDACTED]  
22 [REDACTED]  
23 [REDACTED]  
24 [REDACTED]  
25 [REDACTED] [REDACTED] [REDACTED]  
26 [REDACTED] [REDACTED]

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[REDACTED]

18 (Discussion off the stenographic record.)

19 MR. MELAMED: Lesley, you're on --

20 (Discussion off the stenographic record.) 06:09:06

21 MR. MELAMED: Lesley, Lesley, Lesley...

22 (Discussion off the stenographic record.)

23 MR. SCHWING: Why don't we go into a

24 breakout room, because I don't want to hear...

25 SPECIAL MASTER GARRIE: Me neither. 06:09:17

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[illegible]

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[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

11 Q. (By Mr. Melamed) Sure.

12 So let's make it more concrete. Are you  
13 aware whether Huawei was one of the partners, the  
14 integration partners?

15 A. There was a number of integration 06:55:55  
16 partners. I -- I don't recall all of them in  
17 particular. That information is available in the  
18 interrogatory responses if you -- if you want to  
19 refer to those.

20 Q. Okay. So I'm going to represent to you 06:56:07  
21 that Huawei was identified as one of those  
22 partners.

23 So if you engaged with a Huawei device  
24 and said, yes, I'd like to use Facebook on this  
25 device, did Facebook track the API calls that were 06:56:25

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2	integration?
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\_\_\_\_\_

24 Q. And so the information would have been

25	logged by app ID, so using this example, by Huawei	06:58:06
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06:58:12

□ □ □ □ □

[illegible]

[illegible]

[illegible]

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[illegible]

[illegible]



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20 Q. (By Mr. Melamed) And that is in TAO; is 07:13:23

21 that correct?

22 A. TAO is a -- is a cache on -- on top of

23 the -- the Facebook database. So typically, yes,

24 when you perform a user action like that, it will

25 first be stored in TAO. 07:13:43

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1 Q. And then it would also be stored in Hive; 07:13:46  
2 is that right?

3 MR. SCHWING: Object to form.

4 THE DEPONENT: So generally, Hive would  
5 also include the fact that you clicked on the Like 07:14:03  
6 button, yes.

7 Q. (By Mr. Melamed) Did Facebook ever  
8 collect information about a user when the user  
9 logged in to Facebook from a mobile device?

10 Sorry. Let me restate that. 07:14:23

11 Did Facebook collect user's -- ever  
12 collect a user's phone number when the user logged  
13 in from a mobile device?

14 A. Sorry. Let's -- I'm not sure I  
15 understand -- again, understand the question. 07:14:44

16 If a user logged in to -- to -- to what?

17 Q. To Facebook. If a user logged in to  
18 Facebook from their mobile device, did Facebook  
19 ever collect that user's phone number via that  
20 interaction without -- without explicitly asking 07:15:02  
21 the user to collect that information?

22 A. So, again, are you talking about where a  
23 user logs in to Facebook using a phone number?

24 Q. No. Just logs in without using a phone  
25 number, using the user name and password that's not 07:15:22

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1 a phone number, from a mobile device. Did Facebook 07:15:26  
2 ever collect, as part of that, the phone number  
3 that the user had logged in -- the phone number of  
4 the device that the user had logged in?

5 MR. SCHWING: Object to form. 07:15:40

6 THE DEPONENT: Yeah, I'm -- I'm not  
7 certain that -- that -- I don't know if that's  
8 happened or not. It's possible that mobile -- the  
9 mobile operating system or the carrier transmits  
10 some of that information. I'm -- I'm not an expert 07:16:02  
11 in -- in how Facebook's login processes work and  
12 what -- what information is exchanged with Facebook  
13 from the device or the carrier that they're logging  
14 in on.

15 Q. (By Mr. Melamed) I'm asking because I'm 07:16:16  
16 trying to establish whether Facebook collected  
17 these things and then, if so, where they tracked  
18 them. And that's the connection to the topic, just  
19 to be clear.

20 Did Facebook collect users' mobile device 07:16:30  
21 IDs?

22 A. Can you be more specific, "mobile device  
23 IDs."

24 What do you mean by that? Sorry.

25 Q. Did Facebook ever collect a user's IDFA 07:16:59

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1 when the user logged in to Facebook using their 07:17:08  
2 mobile device?

3 A. By "IDFA," you're referring -- what are  
4 you referring to with "IDFA"? You're referring to  
5 Apple's -- Apple's identifier, which is specific to 07:17:25  
6 iOS?

7 Q. Let's -- let's start there. Did Facebook  
8 ever collect a user's Apple identifier that was  
9 specific to iOS when the user logged in to  
10 Facebook? 07:17:38

11 A. Logged in to Facebook when? On a mobile  
12 or on -- again, I -- again, I'm not trying to be  
13 difficult here. I want to make sure I'm giving you  
14 the best possible answers I can.

15 These -- these terms and topics are very 07:17:54  
16 complicated, and I want to make sure I'm giving you  
17 the right answer.

18 Q. If a user logged in to Facebook using an  
19 Apple mobile device, did Facebook -- at any point  
20 in Facebook's history relevant to this case, 2007 07:18:05  
21 to present, did Facebook collect a device  
22 identifier?

23 A. Again, maybe I'm back to -- we got to --  
24 a specific type of device identifier there, but  
25 we're going back to general device identifiers, 07:18:27

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1 which is a term I'm not sure I fully understand. 07:18:31

2 I see Special Master Garrie --

3 Q. Are you --

4 A. -- is on the -- on the call.

5 THE DEPONENT: Is there guidance you'd 07:18:37  
6 like to give, Mr. Garrie?

7 SPECIAL MASTER GARRIE: Not yet.

8 Q. (By Mr. Melamed) Did -- when Facebook --  
9 when a user logged in to Facebook using an Apple  
10 mobile device, did Facebook ever collect the IDFA, 07:18:48  
11 which is the Apple device identifier?

12 A. My understanding is that while I'm not an  
13 expert, again, at Facebook's login systems and how  
14 that works, my understanding is that yes, if you  
15 logged in to Facebook -- a Facebook app on iOS, 07:19:11  
16 then the Facebook app -- then Apple would provide  
17 the IDFA to Facebook.

18 Q. And if the user logged in to the Facebook  
19 via Android, would Facebook collect the user's GA  
20 ID? 07:19:37

21 A. I'm less familiar with -- with -- with  
22 how Android works. Assuming they're relatively  
23 similar, my understanding is that yes, Google would  
24 provide Facebook with an ID for that device.

25 Q. How -- how did Facebook associate those 07:19:59

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1 IDs with users in their -- in Facebook's internal 07:20:05  
2 systems?

3 MR. SCHWING: Outside of the topic, the  
4 scope of the deposition. It's vague.

5 THE DEPONENT: Yeah, I -- I'm not an 07:20:23  
6 expert in -- in how these -- how these systems  
7 work. From -- from my experience, though, what I  
8 do know is that if you are logged in to Facebook on  
9 a device and that device has provided Facebook with  
10 such a device identifier, then that connection 07:20:44  
11 would be associated with the user in Facebook's  
12 databases, although the precise nature and how that  
13 was stored is not something I'm -- I'm an expert  
14 on. I cannot give canonical testimony on.

15 Q. (By Mr. Melamed) And so your -- you do 07:21:05  
16 not want to provide testimony on -- well, let me  
17 state this in a positive way.

18 Can you identify how Facebook tracked  
19 mobile device IDs that were associated with users?

20 MR. SCHWING: Outside the scope of the 07:21:28  
21 deposition.

22 You can answer, if you can answer.

23 THE DEPONENT: My understanding is that  
24 when a user logged in to a mobile device and that  
25 mobile device provided the Facebook app on that 07:21:41

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1 device with an identifier, then that would be 07:21:44  
2 logged in Facebook's data infrastructure as being  
3 associated with the user ID who logged in on that  
4 device.

5 Q. (By Mr. Melamed) Do you know where that 07:22:02  
6 information would be tracked? Is there a name of a  
7 document or a data system that tracks that  
8 association?

9 MR. SCHWING: Same objections.

10 THE DEPONENT: Again, precisely the 07:22:13  
11 systems that -- that are used to -- to store that  
12 information. I think Hive -- the association would  
13 be -- would have been and would be stored in Hive.  
14 It would likely also have been stored in TAO and  
15 the Facebook -- you know, in TAO, in those 07:22:38  
16 databases.

17 Q. (By Mr. Melamed) Are you familiar with  
18 the term "reciprocity" as it relates to the  
19 relationship between Facebook and developers -- let  
20 me break this down. 07:23:02

21 Are you familiar with the term  
22 "reciprocity" as it is used inside Facebook?

23 MR. SCHWING: Objection as vague.

24 THE DEPONENT: I -- I've heard the term  
25 used inside Facebook and seen it used in -- in some 07:23:14

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1 documents. 07:23:18

2 Q. (By Mr. Melamed) What is your  
3 understanding of what the term means?

4 MR. SCHWING: Objection.

5 Q. (By Mr. Melamed) Inside Facebook? 07:23:23

6 MR. SCHWING: Objection. Vague. Outside  
7 the scope.

8 Go ahead.

9 THE DEPONENT: Yeah, I can't speak to how  
10 that term is used inside Facebook in its entirety. 07:23:35

11 There's likely a number of ways in which that term  
12 has or has not been used by different teams at  
13 different times. The thing I -- the context I'm  
14 aware of it being used in is -- to do with the  
15 Facebook developer platform. 07:23:56

16 Q. (By Mr. Melamed) And can you explain the  
17 context -- the definition of that term and the  
18 context in which you are familiar with it being  
19 used?

20 MR. SCHWING: Object to form. 07:24:09

21 THE DEPONENT: I'm aware of the term  
22 being used to refer to information being made  
23 available to developers and users having the option  
24 to share similar data back to Facebook as part of a  
25 Facebook integration. 07:24:40

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[illegible]

## HIGHLY CONFIDENTIAL

1 Q. (By Mr. Melamed) What about information 07:26:39  
2 that users provided a third-party app directly?  
3 Did third-party apps ever provide that information  
4 back to Facebook?

5 MR. SCHWING: Objection. Vague. 07:26:54

6 THE DEPONENT: Sorry. Can you ask the  
7 question again.

8 Q. (By Mr. Melamed) I'm not trying to be  
9 difficult here. I'm trying to establish  
10 foundationally whether Facebook was receiving 07:27:22  
11 information -- so Facebook provided information to  
12 app users through Facebook could provide  
13 information to apps, correct?

14 A. Through the Facebook platform, users  
15 could provide information to apps, yes. 07:27:37

16 Q. And as -- within the definition of  
17 "reciprocity," as you explained it, there was this  
18 idea that there could be an exchange, which meant  
19 that users should also be able to enable apps to  
20 provide information back to Facebook, their 07:27:52  
21 information back to Facebook, correct?

22 MR. SCHWING: Misstates testimony.  
23 Object to form.

24 THE DEPONENT: So going back to that  
25 definition of "reciprocity" as -- as I understand 07:28:05

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1 it, it's a very-high level idea that if an app is 07:28:08  
2 accessing information on behalf of a user, that  
3 that app would also offer the user the opportunity  
4 to share similar information back to Facebook.

5 Q. (By Mr. Melamed) Did that process ever 07:28:33  
6 occur? Did apps ever provide -- did users --  
7 did -- were users ever able to enable an app to  
8 provide information back to Facebook?

9 A. Yes. One of the common features of the  
10 Facebook platform was that it allowed users to 07:28:55  
11 choose to share activity in the app back to  
12 Facebook.

13 Q. How did Facebook track the information  
14 that it received from users through third-party  
15 apps? 07:29:14

16 A. If the user chose to share their activity  
17 in an app back to Facebook, then, for example, to  
18 post a story or to share a story with their  
19 friends, then -- then yes, that -- that information  
20 would be stored against the user's Facebook profile 07:29:36  
21 and made available on their timeline to their  
22 friends.

23 Q. Where would that -- in which internal  
24 Facebook systems would that information be stored?

25 A. If the user chose to share a story back 07:29:56

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1 to Facebook from a third-party app, then that would 07:29:58  
2 be stored in TAO and made available on the user's  
3 timeline and then potentially rendered in their  
4 friends' newsfeeds.

5 Q. The information that users could share to 07:30:18  
6 Facebook through third-party apps was not limited  
7 to stories, correct?

8 A. The -- the information that users could  
9 share or choose to share back to Facebook included  
10 stories, posts for their timeline, and also at a 07:30:38  
11 time included what was known as Open Graph actions.

12 Q. Can you provide a description of what  
13 Open Graph actions are?

14 A. Open Graph refers to a -- a -- a product  
15 that Facebook had between 2011 and sometime later 07:31:02  
16 where developers could share structured activity  
17 about a user's activity in their app back to  
18 Facebook so it could be shared with their -- their  
19 friend -- shared with their friends on their  
20 Facebook timeline. 07:31:30

21 Q. Was all of the information that was  
22 shared back to Facebook through Open Graph actions  
23 shared with the user's friends via the user's  
24 timeline?

25 MR. SCHWING: Object to form. 07:31:45

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1 THE DEPONENT: The information shared 07:31:51  
2 back to Facebook, the user could choose who had --  
3 which of their friends had the permissions to -- to  
4 see that information.

5 Q. (By Mr. Melamed) Was there any 07:32:20  
6 information from a third-party app shared back to  
7 Facebook that was associated with the user that  
8 Facebook did not make available to share via the  
9 user's timeline?

10 MR. SCHWING: Object to form. 07:32:42

11 THE DEPONENT: Sorry. Can -- can you ask  
12 that again.

13 Q. (By Mr. Melamed) Was there any  
14 information from a third-party app that was shared  
15 back to Facebook associated with an individual user 07:32:53  
16 that Facebook did not make available via the user's  
17 timeline -- did not make available to be shared via  
18 the user's timeline?

19 MR. SCHWING: Same objections.

■ [REDACTED] [REDACTED] [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED]  
■ [REDACTED] [REDACTED]

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[illegible]

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1 Q. Other than from advertisers and data 07:37:26  
2 brokers, did Facebook ever receive payment from any  
3 third party for user information?

4 A. No. Facebook does not sell user data.

5 Q. Let me -- let me just make sure I 07:37:43  
6 understand your answer. I just asked whether it  
7 received payment. So is the answer the same?

8 A. Facebook does not sell user data, and  
9 therefore I'm not aware of a time Facebook has  
10 received payment for user data. 07:38:05

11 Q. Has Facebook ever received any payment  
12 for aggregated user data other than the context  
13 that you're now testifying today as the targeted  
14 advertising and data brokers?

15 A. I'm -- I'm not aware of any time Facebook 07:38:35  
16 has received payment for aggregated user data.

17 Q. Did Facebook ever evaluate the value to  
18 Facebook of aggregated user data?

19 MR. SCHWING: Object to form.

20 THE DEPONENT: Sorry. The value to 07:39:08  
21 Facebook of aggregated user data? I'm sorry. I'm  
22 not sure I understand the question.

23 Q. (By Mr. Melamed) Let me restate it more  
24 simply.

25 Did Facebook ever evaluate the value to 07:39:16

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1 Facebook of user data? 07:39:19

2 MR. SCHWING: Object to form. Outside  
3 the scope of the deposition.

4 THE DEPONENT: I'm not sure how to answer  
5 that. I'm just sure not how to answer that 07:39:39  
6 question.

7 Like -- yeah. It's a -- it's a very --  
8 I'm not sure how to answer that question.

9 Q. (By Mr. Melamed) Did Facebook ever  
10 attempt to evaluate the value to Facebook of any 07:40:00  
11 particular type of user data?

12 MR. SCHWING: Object to form.

13 THE DEPONENT: Again, could you give me  
14 an example of what you mean by "type of user data"?

15 Q. (By Mr. Melamed) Did Facebook ever 07:40:21  
16 attempt to evaluate the value to Facebook of data  
17 about where a user was educated, the user,  
18 you know -- an individual data point, an individual  
19 piece of information?

20 MR. SCHWING: Object to form. 07:40:50

21 THE DEPONENT: Again, I'm not sure how to  
22 answer that -- that question. It's -- it's  
23 possible that an analysis was done across the  
24 15-year time period. I -- like -- it's hard to --  
25 hard to -- hard to understand what's meant by -- by 07:41:12

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07:41:16

3	question.
---	-----------

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■ [REDACTED] ■

■ [REDACTED]

■ [REDACTED]

■ [REDACTED]

5 Q. (By Mr. Melamed) What -- let me withdraw 07:44:50

6 that.

7 For those examples, were there particular

8 document types that provided this tracking

9 information, names of reports, internal systems,

10 et cetera? 07:45:05

11 MR. SCHWING: The question is vague.

12 THE DEPONENT: Again -- typically --

13 typically, this kind of -- this information would

14 be tracked in -- in Hive, Facebook's data

15 warehouse, and may have been propagated into other 07:45:19

16 systems as well. But typically, if I wanted -- if

17 somebody wanted to understand how many users were

18 using an application or the stories being shared

19 from it, typically you would -- you would query

20 that information in Hive. 07:45:36

21 Q. (By Mr. Melamed) We've talked about the

22 method table -- correct? -- during -- during your

23 testimony today?

24 A. Yes, we've talked about the method table.

25 Q. Can you tell me what types of information 07:46:11

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1 are reflected in the method table? 07:46:14

2 A. So going -- going from memory here.

3 These are some of the things I recall in that  
4 table.

5 The first is the app ID, which refers to 07:46:30  
6 the specific Facebook application that would have  
7 made the API call.

8 Another thing that was tracked was the  
9 API method, which refers to when an API call is  
10 made to a particular URL, that maps to -- to a 07:46:52  
11 method, which is the atomic unit of -- of an API  
12 response on the Facebook side.

13 The next thing that were tracked is the  
14 number of unique users whose access token was being  
15 used to request that information on that given day 07:47:15  
16 and then a count of the number of requests that the  
17 given app made to the given method on the given  
18 day.

19 And then my understanding is that another  
20 column is the count of errors, which will be 07:47:38  
21 proportion of the calls that were made.

22 So from my understanding, that's --  
23 that's some of the information at least tracked in  
24 that table.

25 Q. You just -- you just described the method 07:47:53

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1 as "the atomic unit" of an API response on the 07:47:55  
2 Facebook side. Can you elaborate on the  
3 relationship between an API call and a method?

4 A. A method is -- refers to a code -- a  
5 piece of code or a set of code on -- in Facebook's 07:48:17  
6 infrastructure that is written to respond to a  
7 given API request.

8 When an app makes a call to the API,  
9 it -- it supplies information it would like in that  
10 request, and those requests are mapped to a method. 07:48:45

11 Q. Is there a one-to-one mapping between the  
12 API and the method that is used to call the  
13 information requested by that API?

14 A. So that -- that depends on your -- on the  
15 specific definition of API which is being used 07:49:09  
16 in -- in context.

17 So I wouldn't say it's a necessarily a  
18 one-to-one mapping, so -- yeah, I wouldn't say it's  
19 necessarily a one-to-one mapping.

20 Q. Can you explain why there isn't 07:49:23  
21 necessarily a one-to-one mapping?

22 A. So, for example, we talk about the Graph  
23 API as a -- as a -- as a thing. But the Graph API  
24 is a -- is a collection of methods, and so  
25 sometimes people are referring to it an API and 07:49:41

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1 Does that make -- does my -- so I'm 07:51:26  
2 asking whether Facebook maintains something that  
3 would enable us to do that.

4 A. Facebook maintains ways to resolve a  
5 method from a specific API call. I'm not aware of 07:51:40  
6 a programmatic method that would map a method to,  
7 say, part of the Facebook developer documentation,  
8 although those mappings can be -- can be drawn  
9 manually.

10 (Exhibit 426 was marked for 07:51:59  
11 identification by the court reporter and is  
12 attached hereto.)

13 MR. MELAMED: I've introduced what's been  
14 marked as Exhibit 426. Exhibit 426 is an excerpt  
15 from a CSV file produced in this case, Bates number 07:52:26  
16 FB-MDL-MTHD-00080.csv.

17 Mr. Cross and Counsel, for the record,  
18 these files are each individually so large that we  
19 could not share them, so this is an excerpt of ten  
20 rows of one of the -- what have been identified by 07:52:52  
21 counsel as the method table files. I just want to  
22 use this as an example to talk through. I'm not  
23 asking questions about these individual entries  
24 other than to understand what they -- the  
25 information that they represent. 07:53:08

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1 Q. (By Mr. Melamed) Mr. Cross, are you 07:53:08  
2 familiar with the type of information that's  
3 reflected in this document, Exhibit 426?

4 A. Yes, I am.

5 Q. And you reviewed it in preparation for 07:53:24  
6 today?

7 A. I -- I -- I think I reviewed this sample  
8 in preparation for today, and I -- I've worked with  
9 API methods previously.

10 Q. And so can you see my screen, that I'm 07:53:36  
11 sharing Exhibit 426?

12 A. I can, but I also have the information  
13 available, so I don't think you need to, unless  
14 it's useful for you, Mr. Melamed.

15 MR. MELAMED: Thank you. I'll share for 07:53:50  
16 now. I've enlarged -- the only change I've made to  
17 what I think you downloaded and is enlarged in  
18 column size just so we can see a little bit more of  
19 what's in the column.

20 Q. (By Mr. Melamed) When you used the 07:53:59  
21 method table internally, is this the format that is  
22 returned to you?

23 A. Yes, this matches how information is  
24 represented in the method table.

25 Q. So if you look at column A in that, the 07:54:19

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1 header of column D is DS. 07:54:22

2 Do you see that?

3 A. I do.

4 Q. And what does DS stand for in this

5 context? 07:54:28

6 A. DS is the standard way in which Hive

7 tables are partitioned. It would refer to a

8 particular date.

9 Q. So all of the entries on this excerpt

10 reflect entries from December 19th, 2019; is that 07:54:46

11 accurate?

12 A. My understanding is that these were --

13 would reflect API calls made by a given application

14 in a given 24-hour time window indicated by the

15 date, yes. 07:55:04

16 Q. And column B is app ID.

17 Do you see that?

18 A. I do.

19 Q. And that is a -- is the app ID a wholly

20 numeric identifier? 07:55:17

21 A. Yes. App IDs follow Facebook's standard

22 ID infrastructure and are numeric in nature.

23 Q. And what is Facebook's standard ID

24 infrastructure?

25 A. So what I mean by that is when an object 07:55:43

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1 is created in Facebook's TAO -- TAO-fronted 07:55:46  
2 databases, that entity will be given an ID, and  
3 those IDs are used for -- today are used for any  
4 entity in the Facebook social graph database.

5 Q. Is there -- 07:56:13

6 A. Let -- let me back up. I want to make  
7 sure the record is clear on this.

8 There are -- today, if an entry is  
9 created in -- in Facebook's databases, it will be  
10 given an ID, but there are entities in Facebook's 07:56:27  
11 databases which were created before this ID scheme  
12 was -- was created, and in those cases, those  
13 entities may have a different form of ID.

14 Q. When was this ID scheme created?

15 A. I don't -- I'm not sure on the precise 07:56:48  
16 date. This is a question about Facebook's general  
17 data infrastructure, but my understanding is it's  
18 worked this way or a variant of this way during  
19 my -- my entire tenure at Facebook.

20 Q. And are you familiar with what the 07:57:06  
21 structure of an API ID was before the time period  
22 when the --

23 This is a super simple question. Let me  
24 restate this.

25 Do you know what they looked like before? 07:57:26

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3	Q. Sure.
---	----------

6           A.    An app ID uniquely refers to a specific  
7   Facebook app, yes.

10	A. So the kinds of information that would	07:59:38
----	---	----------

11 typically be associated with an app ID would  
12 include the user IDs of the people who have a role  
13 on the application and other metadata, such as when  
14 the app ID was created, information about the app's  
15 privacy policy in terms of service URLs, and then a 08:00:05  
16 number of other metadata fields. I could -- I  
17 could go on for more, but there's a number of  
18 things that would be associated with -- with an app  
19 ID.

20 Q. Would it also identify whether an app was 08:00:21

21 still alive on the platform?

A. The answer to that question depends on  
the definition of -- "still alive." So I -- can  
you help me understand what you mean by "still  
alive," and then maybe I'll be able to give you a

08:00:38

1 more accurate answer. 08:00:41

2 Q. Would the information associated with an  
3 app ID in Facebook's internal records indicate when  
4 an app became available to users on the platform?

5 A. So, again, the answer to that question 08:00:57  
6 somewhat depends on what you mean by "became  
7 available to users on the platform."

8 Again, I'm trying -- in terms of being  
9 helpful, try and give you my understanding of that.

10 One of the properties of an app ID is its 08:01:11

11 mode, which at times are called development mode or  
12 sandbox mode and then public mode. And one of the

13 things that is associated with an app ID is which

14 mode it is in. If an app is in development mode,

15 then only people -- users who have been given a 08:01:32

16 specific role on the application can interact with

17 the app.

18 So one way of determining whether or not  
19 an app is made available to users is whether or not

20 it's in that sandbox mode. There's other ways, 08:01:48

21 too, but hopefully that provides some general  
22 information.

23 Q. Is there information associated with an  
24 app ID that indicates whether an app has been

25 suspended from being used on the platform? 08:02:02

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2 | actually, let me back up.

5	Q. Sure. I mean it colloquially, but you	08:02:21
---	--	----------

12 MR. SCHWING: Object to form.

19 Q. (By Mr. Melamed) I guess I'm asking  
20 whether there's a single table that exists -- like 08:03:10

24 And I think you started to list some of

25 those types of information. I'm just trying to 08:03:23

1 understand if there are additional types of 08:03:24  
2 information.

3 A. Yes. There is a -- there is table in  
4 Hive that -- and the -- that contains information  
5 about a given app ID. That table has -- I want to 08:03:36  
6 say it has quite a few columns.

7 I can continue to try to give you some of  
8 the -- the information I think is the more -- the  
9 more I understand -- that I understand to be in  
10 that table. Those would typically be properties of 08:03:53  
11 the ID itself as opposed to a time series, along  
12 retrieval of information, which would be contained  
13 in other tables.

14 Q. Would -- how do you refer to the -- I  
15 just want to use the right nomenclature. 08:04:18

16 How do you refer to this primary table of  
17 apps that are associated with a particular -- the  
18 app ID table that we're talking about? Is there a  
19 name for that table?

20 A. So the table I'm -- I'm referring to I 08:04:33  
21 know as "DIM\_all\_apps."

22 Q. "DIM"?

23 A. DIM\_all, A-L-L, \_apps, A-P-P-S.

24 Q. That is a Hive table, correct?

25 A. I understand that to be a Hive table. 08:04:53

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HIGHLY CONFIDENTIAL

1 Q. Does -- and do -- when you call it -- 08:04:59  
2 when you talk about this table -- well, do you ever  
3 talk about this table in emails or in conversations  
4 with colleagues?

5 A. It -- it's possible that people have 08:05:14  
6 referred to this table in -- in emails, but...

7 Q. I don't mean -- I'm -- I'm not asking for  
8 a question where asking for memory. I'm just  
9 asking if there's a -- just as the -- we talked  
10 about something called the method table, which is 08:05:28  
11 actually a slighter longer name, is there a way  
12 that you or your colleagues refer to the  
13 DIM\_all\_apps table that is not that full name?

14 A. Not that I can think of now. Not that I  
15 think of now. When you're referring to a specific 08:05:48  
16 table, typically you use the name of the table.

17 Q. Does the DIM\_all\_apps table identify the  
18 number of users who have -- Facebook users that  
19 logged in to the app?

20 A. There are -- there are tables that I'm 08:06:08  
21 aware of or that I recall exist that include  
22 information about the app and information about the  
23 usage of the app. So those -- those tables exist.

24 I -- I can't be 100 percent confident  
25 whether or not that information is in the -- the 08:06:30

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1 DIM\_all\_apps table. 08:06:33

2 Q. Are you confident that it is in another  
3 table?

4 A. I'm confident that there are tables that  
5 list app IDs and the usage of those applications in 08:06:45  
6 various ways over time.

7 Q. Do you know -- are any of those not in  
8 the DIM\_all\_apps table?

9 A. The DIM\_all\_apps table, in my  
10 understanding, refers to a specific table with a 08:07:09  
11 specific set of fields, and I -- I don't recall  
12 today precisely the full set of fields that that --  
13 that table contains. So -- but I am aware of other  
14 tables existing which include information about an  
15 app and its usage. 08:07:32

16 Q. And do you recall the names of any of  
17 those other tables that contain information about  
18 an app and its usage?

19 A. I don't recall the name of those -- those  
20 tables precisely, no, but -- but there are -- I 08:07:43  
21 recall having interacted with such tables in the  
22 past.

23 Q. Do you know if there exists something  
24 like a pivot table that collects information  
25 associated with a single app from different Hive 08:08:07

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1 tables? 08:08:10

2 MR. SCHWING: Object to form.

3 THE DEPONENT: So Facebook's Hive

4 infrastructure, data infrastructure, allows data

5 scientists to run queries which join tables 08:08:25

6 together and -- and produce other tables, either on

7 an ad hoc basis or in order to create downstream

8 tables in Hive itself.

9 Q. (By Mr. Melamed) Do you know whether

10 data scientists have you ever queried Hive tables 08:08:45

11 so that the information about apps inclusive of app

12 ID and name and the elements that are in the

13 DIM\_all\_apps table are combined with information

14 about the app -- apps usage?

15 MR. SCHWING: Object to form. 08:09:09

16 THE DEPONENT: Yes, I'm aware of tables

17 that exist that combine information from

18 DIM\_all\_apps and other sources of information,

19 including app usage.

20 Q. (By Mr. Melamed) And what tables are you 08:09:27

21 aware of that combine that information?

22 A. Again, I -- Facebook's Hive data

23 warehouse has, you know, a large number of tables

24 in it. I -- I don't recall the specific names of

25 those tables here and now. So, you know, I'm 08:09:47

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1 MR. SCHWING: Object to form. 08:11:50

2 THE DEPONENT: My understanding is that

3 there is today a determination of whether or not an

4 app ID is considered a first-party application. I

5 assume that information is stored somewhere in 08:12:05

6 Hive, but I couldn't be sure.

7 Q. (By Mr. Melamed) Do you know the time

8 period for which the method -- the information in

9 the method tables is available?

10 A. The method table goes back to 2012, in my 08:12:28

11 understanding.

12 Q. Going back to Exhibit 426, which is the

13 excerpted ten rows. I'm sorry; it's only nine rows

14 of the method table.

15 Column C is the method. 08:12:44

16 Do you see that?

17 A. I do see that.

18 Q. And that, as you described it before, is

19 the atomic element of the piece of code that is

20 used to call a particular type of information; is 08:12:54

21 that right?

22 A. A method refers to a -- a piece of code

23 in Facebook's infrastructure that's used to create

24 a response to an API request.

25 Q. Okay. So I asked you before whether 08:13:10

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1       there was a mapping of API requests to a -- method                   08:13:13  
2       calls. Am I using the lingo correctly? I don't  
3       mean to be confusing.

4               MR. SCHWING: Object to form.

5               THE DEPONENT: So going back to what I --                   08:13:27  
6       I think I referred to earlier is when an API call  
7       is made, there is a system which takes that API  
8       request and determines which method is run to  
9       create the API response. So that's -- that's  
10      how -- that's how the system works.                               08:13:48

11             Q.     (By Mr. Melamed) Is that system  
12      something that could be produced in this case? Is  
13      that a -- is it a tool that Facebook maintains, or  
14      is it a list, a table?

15             MR. SCHWING: Outside the scope of the                   08:14:00  
16      deposition. Object to form.

17             THE DEPONENT: So the way in which an API  
18      request is received and processed is -- is code,  
19      and it's my understanding it's code that runs to  
20      determine which method to execute in response to an               08:14:21  
21      incoming API request.

22             Q.     (By Mr. Melamed) So there's no public  
23      way to identify the API requests that are  
24      associated with the methods that are in rows 2  
25      through 10 in column C of Exhibit 426; is that                   08:14:40

1 accurate? 08:14:44

2 MR. SCHWING: Object to form.

3 THE DEPONENT: There is -- you can read  
4 some of these entries here and -- and understand  
5 what the API request would have been in order to -- 08:14:55  
6 to -- to hit the method.

7 Q. (By Mr. Melamed) Okay. That's helpful,  
8 but it's not an answer to my question, which is --  
9 if -- if plaintiffs in this case wanted an index  
10 that provided API requests and cross-referenced 08:15:16  
11 those API requests to the method so that we could  
12 make use of the method table, is that something  
13 that is -- that could -- is that even within the  
14 realm of possibility as something that could be  
15 produced? 08:15:35

16 MR. SCHWING: It's outside the scope of  
17 the deposition. Object to form.

18 THE DEPONENT: I -- I'm not sure I'm an  
19 expert in what -- what can be produced or in what  
20 form that would be appropriate. If it would help 08:15:50  
21 if, we could go through these and I could talk  
22 through my understanding of how they map to an API  
23 method, and if that would be useful, then that  
24 might be help you interpret this information.

25 Q. (By Mr. Melamed) Thank you for the 08:16:07

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1 offer. Unfortunately, these are nine rows out of 08:16:07  
2 many, many, many millions and were not selected as  
3 the rows that were the methods -- based on the  
4 methods. They were just a selection of the first  
5 nine rows of a particular document. 08:16:21

6 So we'll have to -- that's something I  
7 think we will have to discuss with counsel.

8 Row -- I'm sorry. Column D has the  
9 header "CNT."

10 Can you tell me what "CNT" stands for? 08:16:39

11 A. "CNT" stands for count.

12 Q. And what does "count" mean in this  
13 context?

14 A. "Count" in this context means the number  
15 of API requests made by that application to that 08:16:54  
16 Graph API method within the given 24-hour time  
17 window described by the DS column.

18 Q. So to take row 2 as an example, the first  
19 four columns indicate that on -- in the 24 hour  
20 time period of December 19th, 2019, an app -- an 08:17:18  
21 application with the ID number in column B would --  
22 made API requests corresponding to the method  
23 GR:Post:page/messenger\_profile 12 times; is that  
24 accurate?

25 A. A caveat here is that my understanding of 08:17:46

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1 the count column is that this what's known in 08:17:47  
2 Presto as "approx count" or in Hive as "approx  
3 count," and so it's -- it's a count that is  
4 accurate to within a high degree of accuracy but --  
5 but may not be 100 percent accurate. But it can be 08:18:06  
6 assumed to be as accurate as needed.

7 Q. Assumed to be accurate as needed by whom?

8 A. In general, when -- my understanding is  
9 it's -- it's accurate to within 95 percent of the  
10 true value, at least, if not more. 08:18:27

11 Q. Do you know -- do you know what -- the  
12 reason that it is not accurate for 100 percent of  
13 the value?

14 A. My understanding that that's due to  
15 computational intensity. The approx count function 08:18:50  
16 in -- Presto, which is the query engine, is --  
17 produces a result with -- that's highly accurate  
18 with significantly less computing power.

19 Q. And then column E is users. Do you know  
20 what the information reflected in that column 08:19:13  
21 means?

22 A. My understanding is this refers to the  
23 number of distinct user access tokens or entity  
24 access tokens that were used to make the API  
25 requests. 08:19:32

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1 Q. So for row 2, those 12 requests had a 08:19:33  
2 95 percent accuracy level by that one app for the  
3 particular method in the 24 hours of December 19th,  
4 2019, were made by a single -- on behalf of a  
5 single user; is that accurate? 08:19:51

6 A. That's my understanding of what -- what  
7 column B means, yes.

8 Q. Okay. If you look at Column E, row 9.  
9 There are other rows that have this information,  
10 too, but just for -- for purposes of this 08:20:05  
11 discussion, row 9 has users as zero. And that app  
12 in row 9 during the 24 hour time period on  
13 December 19th, 2019, requested a particular method  
14 GR:get:\search:place 480 times but did so on behalf  
15 of zero users. 08:20:35

16 Do you see that?

17 A. I do see that.

18 Q. Do you know how that -- how it was zero  
19 users -- how that many --

20 Let me rephrase the question. 08:20:42

21 Do you know how an API request could be  
22 made, let alone made 480 times, without the user  
23 having requested it?

24 A. There are --

25 Sorry. Say that again, Austin. 08:21:05

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## HIGHLY CONFIDENTIAL

1 MR. SCHWING: Object to form. 08:21:07

2 You can go ahead and answer, Mr. Cross.

3 THE DEPONENT: Apps have what's called an

4 "app access token," which does not refer to a

5 particular user's authenticated session, and my 08:21:16

6 understanding is that it's likely that those calls

7 were made with an app access token, not a user

8 access token. I can't 100 percent of that, because

9 I'd need to fully understand the lineage of the

10 data systems, but that's -- that's my understanding 08:21:36

11 of -- of how you would have API requests in here

12 without them being ascribed to a number of users.

13 Q. (By Mr. Melamed) And then column F --

14 and we can refer to return to row 2 for this -- is

15 the -- the header of column F is "CNT\_successful." 08:21:56

16 Do you know what that stands for?

17 A. That -- that refers to count successful.

18 Q. And what does count successful mean in

19 this context?

20 A. My understanding is that refers to 08:22:12

21 whether or not the API -- the Graph API

22 infrastructure considered the request by the

23 third-party app to be a successful request.

24 Q. What makes a successful request?

25 Let me rephrase that. 08:22:27

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1                   What does it mean in context of this                   08:22:32  
2                   spreadsheet to call a request successful?

3                   A.    My understanding is it means that the app  
4                   made a well-formed request and that the API  
5                   returned a response or was able to return a                   08:22:49  
6                   response -- a response to that request.

7                   Q.    Is it possible to return a response that  
8                   does not provide information in response to a  
9                   request?

10                  Actually, let me -- do you understand                   08:23:03  
11                  what I'm asking with that question? I'm sorry.  
12                  This is --

13                  MR. SCHWING: The question is vague.

14                  MR. MELAMED: Yeah. So --

15                  MR. SCHWING: If you do know what he                   08:23:13  
16                  means, go ahead. But I don't -- it seems to me  
17                  there was uncertainty.

18                  MR. MELAMED: I know what I intend to  
19                  mean. I'm not sure I communicated it to you,  
20                  Simon -- or Mr. Cross. I'm sorry.                   08:23:22

21                  Q.    (By Mr. Melamed) So if you're able to  
22                  answer, just state what you think -- the question  
23                  you think you're answering and I'll help to  
24                  clarify.

25                  If you're not able to answer, I'm happy                   08:23:31

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1 to clarify. 08:23:33

2 MR. SCHWING: Yeah, I'm going to restate  
3 the objection that it's vague.

4 THE DEPONENT: What I think you mean is  
5 is it possible for the API to -- to return 08:23:52  
6 successful -- to -- for the API request to be  
7 considered successful but return no information?

8 Is that -- is what you're asking? If so --

9 Q. (By Mr. Melamed) Yes. Let's -- let's  
10 say -- let's put a different example on here. 08:24:07

11 Let's say there was an API call made for  
12 your friend's religious and political preferences,  
13 and that API call was well formed, and so it  
14 reflects in this method table in the counts and the  
15 users. And would that -- but you had not provided 08:24:27  
16 access to that information to the app.

17 Would that return has -- be indicated in  
18 the CNT successful as a successful query for that  
19 information?

20 MR. SCHWING: Vague. Incomplete 08:24:46  
21 hypothetical.

22 THE DEPONENT: Yeah, again, the -- a full  
23 answer here like -- might require some -- some --  
24 some digging in exactly how these data pipelines  
25 work. 08:25:07

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## HIGHLY CONFIDENTIAL

1                   So -- but -- but my understanding is that                   08:25:07  
2                   the API would return a successful response even if  
3                   there was no information returned based on the  
4                   permissions and your privacy settings. As far as  
5                   the API concerned, it was a lawful request and it                   08:25:28  
6                   was able to provide a response, but that response  
7                   being empty because of permission checks not  
8                   passing would be considered a successful request  
9                   even in -- in the case of empty response.

10                  Q.     (By Mr. Melamed) Thank you. That's                   08:25:48  
11                  helpful.

12                         Is there any other information other than  
13                         these columns reflected in the method table?

14                  A.     My understanding is -- is this is  
15                         representative of what is stored in -- in the                   08:26:03  
16                         method table.

17                         MR. SCHWING: We've been going about an  
18                         hour.

19                         MR. MELAMED: We can go off the record  
20                         and take a break.   08:26:17

21                         THE VIDEOGRAPHER: Okay. We're off the  
22                         record. It's 8:26 p.m.

23                         (Recess taken.)

24                         THE VIDEOGRAPHER: We're back on the  
25                         record. It's 8:50 p.m.                                       08:50:30

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8 (Exhibit 427 was marked for  
9 identification by the court reporter and is  
10 attached hereto.) 08:54:14

11 MR. MELAMED: So I've marked what's  
12 been -- or I've introduced what's been marked as  
13 Exhibit 427. You're going to see that the  
14 Exhibit Share is unable to preview the file, and  
15 I'm happy to share my screen to show it. 08:54:30

16 Q. (By Mr. Melamed) It is Facebook -- I'm  
17 sorry. The Bates number is FB-CA-MDL-02936298.tsv.  
18 I'll note that the version you're looking at on my  
19 screen says "(2)" because I had downloaded it  
20 earlier, and I'll state for the record that I 08:55:00  
21 haven't made any changes to this other than to wrap  
22 text and expand the columns so that we can see  
23 them.

24 I'll also state for the record that this,  
25 like the method tool spreadsheet we were looking at 08:55:17

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15 (Exhibit 428 was marked for 09:25:48

16 identification by the court reporter and is

17 attached hereto.)

18 MR. MELAMED: I have introduced what's

19 been marked as Exhibit 428. This one you should be

20 able to open in your Exhibit Share, but I will 09:26:45

21 share my screen in a second.

22 While you're pulling it up, Exhibit 428

23 is, again, an excerpt of this spreadsheet provided

24 by Facebook at FB-CA-MDL-02936296.

25 Q. (By Mr. Melamed) And we went through the 09:27:17

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21 MR. MELAMED: Let's go off the record.

22 THE VIDEOGRAPHER: Okay. We're off the

23 record. It's 9:54 p.m.

24 (TIME NOTED: 9:54 p.m.)

25 ---o0o---




1 I, Rebecca L. Romano, a Registered  
2 Professional Reporter, Certified Shorthand  
3 Reporter, Certified Court Reporter, do hereby  
4 certify:

5 That the foregoing proceedings were taken  
6 before me remotely at the time and place herein set  
7 forth; that any deponents in the foregoing  
8 proceedings, prior to testifying, were administered  
9 an oath; that a record of the proceedings was made  
10 by me using machine shorthand which was thereafter  
11 transcribed under my direction; that the foregoing  
12 transcript is true record of the testimony given.

13 Further, that if the foregoing pertains to the  
14 original transcript of a deposition in a Federal  
15 Case, before completion of the proceedings, review  
16 of the transcript [X] was [ ] was not requested.

17 I further certify I am neither financially  
18 interested in the action nor a relative or employee  
19 of any attorney or any party to this action.

20 IN WITNESS WHEREOF, I have this date  
21 subscribed my name this 23rd day June, 2022.

22  
23 

24 Rebecca L. Romano, RPR, CCR

25 CSR No. 12546

1 I, SIMON CROSS, do hereby declare under  
2 penalty of perjury that I have read the foregoing  
3 transcript; that I have made any corrections as  
4 appear notes; that my testimony as contained  
5 herein, as corrected, is true and correct.

6 Executed this 6th day of August,  
7 2022, at \_\_\_\_\_, \_\_\_\_\_.

8  
9  
10  
11   
12 \_\_\_\_\_  
13 SIMON CROSS

HIGHLY CONFIDENTIAL

RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION  
SIMON CROSS (JOB NO. 5281223)

## E R R A T A S H E E T

PAGE 741 LINE 15 CHANGE "Facebook" to  
"how Facebook"

REASON misspoke

PAGE 742 LINE 9 CHANGE "No" to "Objection"

REASON transcription error

PAGE 743 LINE 7 CHANGE "with" to "which"

REASON transcription error

PAGE 760 LINE 18 CHANGE "compute" to "computing"

REASON transcription error

PAGE 761 LINE 21 CHANGE "compute" to "computing"

REASON transcription error

PAGE 768 LINE 14 CHANGE "detail" to "detailed"

REASON transcription error



6th Aug 2022

SIMON CROSS

Date

HIGHLY CONFIDENTIAL

RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION  
SIMON CROSS (JOB NO. 5281223)

## E R R A T A S H E E T

PAGE 796 LINE 6 CHANGE [REDACTED]

REASON transcription error

PAGE 803 LINE 4 CHANGE "Ally" to "Ali"

REASON transcription error

PAGE 810 LINE 2 CHANGE "in" to "with"

REASON transcription error

PAGE 835 LINE 13 CHANGE [REDACTED]

REASON transcription error

PAGE 835 LINE 21 CHANGE [REDACTED]

REASON transcription error

PAGE 836 LINE 14 CHANGE [REDACTED]

REASON transcription error



6th Aug 2022

SIMON CROSS

Date

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HIGHLY CONFIDENTIAL

RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION  
SIMON CROSS (JOB NO. 5281223)

## E R R A T A S H E E T

PAGE 838 LINE 3 CHANGE delete "time"

REASON misspoke

PAGE 844 LINE 7 CHANGE [REDACTED]

REASON transcription error

PAGE 848 LINE 19 CHANGE "Ally" to "Ali"

REASON transcription error

PAGE 861 LINE 16 CHANGE [REDACTED]

REASON transcription error

PAGE 871 LINE 24 CHANGE [REDACTED]

REASON transcription error

PAGE 878 LINE 14 CHANGE [REDACTED]

REASON transcription error



6th Aug 2022

SIMON CROSS

Date

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HIGHLY CONFIDENTIAL

RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION  
SIMON CROSS (JOB NO. 5281223)

## E R R A T A S H E E T

PAGE 883 LINE 24 CHANGE "hear..." to  
"hear privileged information."

REASON transcription error

PAGE 891 LINE 7 CHANGE [REDACTED]

REASON transcription error

PAGE 905 LINE 7 CHANGE [REDACTED]

REASON misspoke

PAGE 924 LINE 13 CHANGE "user" to "app"

REASON misspoke

PAGE 924 LINE 16 CHANGE "idea" to "ID"

REASON transcription error

PAGE 948 LINE 25 CHANGE [REDACTED]

REASON transcription error



6th Aug 2022

SIMON CROSS

Date

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HIGHLY CONFIDENTIAL

RE: FACEBOOK, INC., CONSUMER USER PROFILE LITIGATION  
SIMON CROSS (JOB NO. 5281223)

## E R R A T A S H E E T

PAGE 949 LINE 3 CHANGE [REDACTED]

REASON transcription error

PAGE \_\_\_\_\_ LINE \_\_\_\_\_ CHANGE \_\_\_\_\_

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[&amp; - 3:18]

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[clear - concerning]

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[employee - exactly]

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[exactly - facebook]

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**[facebook - facility]**

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**[l.l.p. - logging]**

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**[particular - permission]**

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**[permissions - policy]**

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[policy - privilege]

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[privileged - querying]

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**[renders - retention]**

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[retention - schwing]

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[schwing - shared]

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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